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CITY GOVERNMENT.

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SPECIAL NOTICE.

City officials and friends of City Government visiting New York are cordially invited to make the office of City Government their headquarters during their stay in the city. Desks, stenographers and stationery are placed at their disposal, and their mail may be addressed in our care.

WANTED—A few copies of *City Government* of November, 1896, for which 25 cents a copy will be allowed. City Government Publishing Co., Troy, N. Y.

INDEPENDENT AND THOUGHTFUL.

Mr. L. N. Case, for many years the superintendent of the highly successful Detroit water works, a former vice president of the American Water Works Association, and at present manager and secretary of the new municipal water and light plant at Duluth, Minn., has been a subscriber to "City Government" ever since it was started. Here is what he writes about it:

The coming of your journal is more than usually welcome among the many that I receive. I like its style, and I like better its independent and thoughtful consideration of all questions treated upon by it. I find in each issue something that is interesting and educational to myself, and that more than repays me for the cost of the subscription.

Mr. Case is one of the best known water works men in this country, and has the reputation of saying just what he means and nothing more. We are particularly pleased with his endorsement of our work.

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"WILL BE CAREFULLY FILED."

Mr. Joseph W. Stover, president of the Gamewell Fire Alarm Telegraph Company, has been a reader of "City Government" since its first issue. In a recent letter to the editor he says:

"I have carefully read 'City Government' for October—a most interesting number. Its matter is so valuable that I have no doubt it will be carefully filed by many officials."

Mr. Stover shows his appreciation of "City Government" not only by being a "constant reader," but by patronizing its advertising columns. His company's advertisement has occupied the same position in this paper for more than three years.

TWO SIGNIFICANT ELEC- TIONS.

James K. McGuire, Democrat, has been elected mayor of the Republican city of Syracuse for the third time. The campaign just closed was a hot one, the Republicans having a good candidate in Mr. Hancock, former attorney general of the state, who contested every inch of the ground with the mayor. The victory of Mayor McGuire is another demonstration of the fact that the majority of the people, regardless of political ties, will stand by a mayor who gives them an honest, intelligent and beneficial administration. During the four years that Mr. McGuire has been at the head of its government the city of Syracuse has made most remarkable progress in all branches of the public service. The new city charter, to go into effect on Jan. 1, gives additional powers and responsibilities to the mayor, and Mr. McGuire is well qualified to assume them.

The same force—the desire for progressive city government—that won the day for McGuire in Syracuse won the election for the Republican candidate in the Democratic city of Albany. Mayor Van Alstyne's administration failed to bring to the city of Albany any of the progressive movements that are now working for the betterment of the public service in so many of our American cities. The majority of city voters are awake—and they will almost invariably refuse to continue in office a mayor who is distinctly inactive and unprogressive. James H. Blessing, the Republican mayor-elect of Albany, is a business man whose record for enterprise and progressiveness promises well for the future of Albany's municipal affairs.

REGULATING THE SOCIAL EVIL.

That the "social evil" is a necessity that must be tolerated in large cities is conceded generally by fair minded people. For years well meaning persons of various cities have endeavored to eradicate the most despised practice of humanity, but the crusade against the lowest strata of society has been fruitful only of dire results. New York city furnishes the best and the only necessary example of "social purification" and its inevitable results. Most determined and persistent efforts have been made to exterminate the harlot from the life of the metropolis, and as a result of this work the city to-day has less control over its degraded women than it ever had before. Dr. Parkhurst and others of his kind have only succeeded in driving these women from known habitations, where it would have been possible to keep them under proper police surveillance, to scattered and secret quarters in respectable houses and to the streets. One result is that all sorts of robberies and abuses may be committed by base women without fear of detection and prosecution.

If the "social evil" is to be tolerated in our cities, and experience dictates that it

must be, it should be kept under the strictest kind of police surveillance. The first object of the police should be to save from lives of shame the many young girls whose inexperience and sophistry permit them to seek the shelter of an infamous house in moments of despair of better careers. Other objects should be the protection of health and the prevention of robbery.

Colonel Philip Deitsch, superintendent of police at Cincinnati, has a method for the control of houses of ill fame that deserves to be studied and emulated by officials of other cities. He keeps in his office a record of every bawdy house in the city, showing its location, the name of the proprietor, the number and names of its inmates and all other information necessary for the police to know. He gives the "landladies" to clearly understand that they must either co-operate with the police in their efforts to properly regulate these houses or get out of the business. For obvious reasons we cannot go into the details of Colonel Deitsch's method in these columns, but we will not refrain from calling the attention of our readers to a particularly effective part of the work. The superintendent of police furnishes to all the "landladies" printed blank forms upon which they are required to report to the superintendent the name, age, parentage, previous life, previous place of residence and physical condition of every new girl taken in by them. The superintendent makes the immediate return of these blanks, properly and honestly filled out, imperative, and as each blank is received at the department its statements are promptly investigated. On information obtained under this method, during a period of six years 120 girls have been taken from disreputable houses by the police and restored to their homes or sent to proper institutions.

FILTHY PUBLIC BUILDINGS.

While most of the municipal buildings in American cities are kept in a cleanly and sightly condition, there are some, especially city halls where politicians frequent the corridors, that border on public nuisances. A well-bred woman of about 45 years some days ago entered the private office of the postmaster at New Haven, Conn., and stated that she wished to formally complain of the condition of the post office corridor; she believed the filth that was allowed to accumulate was liable to breed disease, certainly it soiled the garments of women. We should not be surprised to hear of similar complaints against many of our city halls. Unpleasant as it may be to deny the ward politician his right to decorate the floor of a city hall corridor with tobacco juice, we feel that the denial must be made in the name of common decency and in respect to the rights of citizens of aesthetic inclinations.

STREET CLEANING AND GARBAGE DISPOSAL.

Probably no subject of municipal improvement has been of more universal interest during the last decade than that of street cleaning and garbage disposal, so great a reform in which was inaugurated by the late Col. George Waring of New York city. A paper upon this subject presented by Dr. W. C. Woodward, health officer of the District of Columbia, to the American Society of Municipal Improvements at its recent convention, is therefore of general interest. His paper

treats principally of the advantage of the city doing this work by its own employees, rather than by contract. He observes the absence of uniformity in methods of collecting and disposing of the waste, due probably to the varying stages which the cities have reached in the evolution of complete and perfect systems.

In the older and larger cities, as a rule, all wastes are collected and disposed of at public expense, but in many others, only kitchen waste is collected through municipal agency. The report advises that any service which may be organized or improved by extension should be devised so as to include within its scope the collection of ashes, garbage, dead animals, night soil, miscellaneous refuse and street sweepings.

Three principal points or conclusions may be deduced from Dr. Woodward's report, viz., that all municipal scavenging be performed at municipal expense, that all service necessary for the performance of such work be performed by the city directly and not through the agency of contractors, and that, if necessary, a special tax be levied to meet the cost of such work.

STREET RAILWAY MANAGERS WAKING UP.

In a paper read before the convention of the Street Railway Association of New York, Mr. F. D. Rounds, general superintendent of the Metropolitan street railway of New York, discusses the question of how to increase the efficiency of employees. At the outset Mr. Rounds frankly states that this question has been forced upon street railway managers in recent years by the increased liability to accident incident with the introduction of rapidly moving mechanically driven cars. He argues that the efficiency of employees may be promoted by paying satisfactory wages, by making careful selections from among the applicants after investigating their past records, by giving new men thorough education in their duties, by treating them as men and not as slaves and by giving them an understanding that loyal service will be rewarded by promotion. All of these means for securing capable and loyal employees may be new in the street railway business and may be timely topics for discussion in a convention of street railway magnates, but nevertheless, they are as old as Gibraltar—and as solidly fixed in the methods of individual and successful business men.

MAYOR FLOWER DEFEATED

Mayor Walter C. Flower, of New Orleans, was defeated in his candidacy for re-election on Nov. 7, the victory going to Paul Capdeville, the regular Democratic nominee. The immense waterworks, drainage and sewerage improvements for which the people of New Orleans several months ago voted a bond issue of \$15,000,000, will be carried to completion under the administration of the new mayor.

NEW OFFICERS OF A. S. M. I.

The new officers of the American Society of Municipal Improvements are: President, Almon D. Thompson, Peoria, Ill.; first vice president, Robert E. McMath, St. Louis, Mo.; second vice president, Bernard Saunders, Toronto, Ont.; third vice president, Dr. W. C. Woodward, Washington, D. C.; secretary, D. L. Fulton, Allegheny, Pa.; treasurer, T. J. O'Brien, Oswego, N. Y.; finance committee, W. B. Howe, Concord, N. H.; Joseph Emmer, Grand Rapids, Mich., and W. S. Cook, New Bedford, Mass. Next

year's meeting will be held at Milwaukee, Wis.

EDITORIAL COMMENT.

The enormous quantity of fresh water used in New York city for the extinguishment of fires, street sprinkling and sewer flushing can and ought to be saved for other purposes. Salt water, of which New York has an inexhaustible supply, is more effective than fresh water in the extinguishment of fire, and it is better, from a sanitary standpoint, for street sprinkling and sewer flushing. The board of public improvements would serve the people better if they would investigate the matter of constructing an independent salt water system, instead of giving up their time to negotiations with such an obvious fraud as the Ramapo Water Company.

The proposition of Professor Edward W. Bemis to connect himself officially with the League of American Municipalities has been rejected by the executive committee of that organization. The professor was anxious to use the name of the League in connection with the work of his Bureau of Economic Research, recently established in New York, and proposed to collect statistics on municipal monopolies for the League without compensation. His generous offer was rejected because the League is strictly an organization of city officials who are working out practical reforms in the public service. All the improvement that has been made in municipal government in this country has resulted from the work of experienced city officials. The League of American Municipalities is getting along very nicely, and it is satisfied to let well enough alone.

In the end the city of Toledo had to pay the costs of the injunction proceeding which prevented the members of the council from attending the Syracuse convention at public expense. The bill of costs was almost as much of a drain on the public treasury as the bill of convention expense would have been. It included a fee of \$228 for the two lawyers who brought the suit "merely in the interests of public economy."

Mayor Phelan, of San Francisco, believes in stopping leaks. Various departments of his city government have been known to buy supplies at higher than market prices, and it has not been an uncommon thing to unload various kinds of gold bricks upon the municipality. About a month ago the mayor formally requested the board of supervisors to authorize him to appoint an official for the remainder of the calendar year, whose duty it shall be to supervise all purchases and satisfy himself that the city is getting full quantity and is paying reasonable prices. The board could do nothing but grant the mayor's request, and now San Francisco buys its municipal supplies through a purchasing agent who must stand responsible to the mayor.

At Hamilton, Ohio, it is proposed to make the railroad companies pay for lighting their crossings. Mr. Mason, of the board of control, who has been investigating the matter, says there are 35 railroad crossings in the city, 27 of them ought to be lighted and 22 are being lighted at the expense of the city. The lights cost the city \$65 a year each, and Mr. Mason reckons that the railroads ought to pay that price for each of 22 lights, or \$1,430, into the lighting fund each year. He has introduced an ordinance with this end in view.

LEAGUE OF AMERICAN MUNICIPALITIES

California League to Meet.

At a recent meeting of the executive committee of the League of California Municipalities it was decided to hold the next convention of the organization at San Francisco on December 13, 14 and 15. The program for the convention, so far as made up, is as follows:

Wednesday, Dec. 13.—Roll call; address by the president, James D. Phelan; reports of officers; discussion on the future work of the league by Mayor Snow of Oakland, Mayor Brooks of Marysville, Mayor Hutchinson of Palo Alto, Mayor Eaton of Los Angeles and Mayor Capps of San Diego; proposed amendments to constitution; question box.

Thursday, Dec. 14.—Fifteen-minute papers on "Street Improvement Acts" by F. K. Lane of San Francisco, W. A. Beasley of San Jose, George Pearce of Santa Rosa, E. K. Taylor of Alameda, B. A. Hayne of Berkeley and City Attorney Haas of Los Angeles; papers on "Experience of Cities With Municipal Water Works" by T. H. Carr of Nevada City, Mayor Sweet of Santa Rosa, Mayor Lamb of Santa Cruz, Mayor Druffel of Santa Clara and others.

Friday, Dec. 15.—Reports of committees; election of officers; opening of question box.

Coming Meeting in Ohio.

Mayor J. L. Orbison, treasurer of the Ohio State League of Municipalities, writes that he expects to meet the other members of the executive committee at the Phillips House, Dayton, O., in the near future, when plans for holding the next annual convention will be discussed. It is to be hoped that the Phillips will be definitely settled upon as the headquarters during convention week, for it is not only the most centrally located, but it is also commodious, comfortable and modern. Landlord Breen is accustomed to do the honors on such occasions, for the Phillips is always chosen as headquarters for every convention meeting in Dayton.

Iowa League Convention.

The second annual convention of the League of Iowa Municipalities, held at Des Moines last month, was a great success. Over a hundred city officials were in attendance, nearly every municipality of any consequence in the state being represented. Mayor John Mac Vicar welcomed the delegates to his city in words cleverly put together and heartily spoken. The response in behalf of the visitors was made by Mayor John M. Redmond, of Cedar Rapids. Addresses and papers were presented by Edward Kibler, of the Ohio municipal code commission, President George H. Gates, of Iowa College, H. F. Brown, city clerk of Red Oak, and others.

The report of the committee on legislation, submitted by Chairman C. E. Campbell, urged that the following bills be brought before the next session of the Iowa legislature with the approval of the League:

A bill relating to the method of assessing the cost of paving, sewerage and curbing, and providing that the cost of such improvements shall be apportioned in the manner provided for by the code, except that no lot, tract or parcel of abutting or adjacent property shall be assessed in excess of the special benefits accruing to the property by reason of such improvement. It provides that in all cases the presumption shall be that the special benefits conferred upon the property affected are equal to or greater than the amount authorized by existing statute. The portion of the cost of any such improvement, it is provided, not assessable to abutting or adjacent prop-

erty because in excess of the special benefits conferred must be paid in the manner and from the fund provided for paying for the cost of street intersections or from the special improvement tax, for which the bill makes provision. All the cities embraced in the act are clothed with power to levy annually in addition to the present tax authorized, a special improvement tax not to exceed five mills on the dollar.

An act to amend sections 758 and 888 of the code, relating to the bridge fund. The purpose of the bill is to empower cities having a population of over 7,000 to expend the bridge fund instead of relegating the expenditure of this fund to the board of supervisors, as is the case under the law as it relates to cities of the second and third classes. Cities of the first class already possess authority to expend the bridge fund, and the smaller cities and towns ask to be given the same privilege.

An act to authorize the cities of the first class having a paid fire department to levy a tax for the purpose of paying the expenses of its maintenance. It provides for the levy of a tax not to exceed five mills on the dollar.

An act to amend section 743 of chapter 5, title 5 of the code. The object of the measure is to change the rate of interest on certain deposits of public moneys, now fixed at 4 per cent, to 3 per cent, per annum, because of the claim that it is impracticable to loan the funds at the rate fixed by law.

A bill providing for the depositing the public funds and covering the interest paid for the use of the same into the public treasury, instead of having the interest money diverted into private pockets, as has long been the practice.

An act to amend section 1530, chapter 2, title 8 of the code, relating to the county road fund, and to amend chapter 11, title 5, relating to taxation. The purpose of the bill is to permit cities and incorporated towns to annually levy a tax not to exceed one mill on the dollar, to be known as the "city road fund," which shall be turned over to the city and expended on the roads within the corporate limits, or roads adjacent, under the direction of the city council. The fund is expended at present under the direction of the board of supervisors, the council being confined to designating the roads or streets where it may be expended.

A bill for an act to amend section 767 of chapter 6, title 5 of the code, clothing the city council with authority to present reasonable rules and regulations for the government, construction, maintenance and operation of street railways, and empowering it to regulate the rates of fare to be charged.

The League elected the following officers for the ensuing year: President, Mayor John M. Redmond, Cedar Rapids; first vice president, Mayor Frank K. Stebbins, Iowa City; second vice president, Mayor S. J. Bennett, Fort Dodge; third vice president, W. E. Ray; secretary and treasurer, Mayor Frank G. Pierce, Marshalltown.

How St. Paul Joined the League.

St. Paul is a member of the League of American Municipalities, the annual dues of \$50 having been paid by the Commercial Club after the resolution appropriating the amount from the public funds had been defeated in the board of aldermen by the objection of Alderman E. P. Sanborn. The matter of St. Paul joining the League has always been favored by the mayor, the head of every city department, all the members of the upper branch and most of the members of the lower branch of the council, the republican and democratic newspapers, the Commercial Club and all the other representative organizations in the city. In spite of this frequently expressed and almost unanimous public sentiment in favor of making St. Paul a part of the League, the appropriation for the dues has been persistently blocked in the

board of aldermen by Mr. Sanborn. His party's leading local organ, the "Pioneer Press," recently made this editorial comment:

The watchfulness of the board of aldermen over municipal expenditures is, of course, very praiseworthy. But when it comes to refusing to appropriate the \$50 required to admit the city to the League of American Municipalities it is economy run mad. A more trying exhibition of provincialism and shortsightedness has seldom been given. There is no way imaginable in which the city could spend \$50 with a surer saving of money and trouble than by membership in that league. Nor does membership involve any further expenditures. It gives those officers of the city who may desire to attend the meetings of the league the right to do so, but it does not compel the council to pay their expenses. Not one cent need be paid out in addition to the \$50. And what return is there for that expenditure? Provided all wisdom and all knowledge resides in the officers of this city, it may be admitted that there would be but little advantage in membership. But for those members of the board of aldermen who oppose the appropriation there is food for reflection in the fact that those departments which are conducted in the most satisfactory and the most economical way are the very ones whose managers do not pretend that they have nothing to learn; who are continually taking advantage of the devices evolved in other cities and avoiding their mistakes; who, in short, try to keep in touch with the best practice of their special departments in other cities, getting suggestions wherever they can find them and adapting them to the needs of this city. * * * The League of American Municipalities covers the whole field of municipal activity. Its members are practical men, not theorists; men who have practical knowledge of the various problems that confront councils and mayors and municipal officers of all sorts in the performance of their work. The addresses cover matters of live interest to the cities of this country. This very year, at the convention recently held in Syracuse, the two subjects that were given most attention were franchises and garbage—the very problems that are interesting our own city authorities to-day. The addresses, especially those relating to garbage, were full of suggestions based on practical experiments made by practical men. And this city would be none the worse off if they were read and digested by the very members of the board of aldermen who seem to think that there is nothing for them to learn. The city may not avoid all mistakes by membership in the league, but there is enough that it can learn to afford to pay that \$50 a hundred times over.

The Commercial Club, which represents practically the entire business community of St. Paul, and has done more than any other one agency to advance the interests of the city, gave Alderman Sanborn a deserved rebuke when it endorsed the words of the "Pioneer Press" and made the payment of dues necessary to have St. Paul enrolled as a member of the League.

Chicago Joins the League.

At their first meeting in October the aldermen of Chicago voted to have that city become a member of the League of American Municipalities. A resolution instructing the city comptroller to remit one year's dues and have Chicago enrolled as a member was adopted unanimously. The three greatest cities of the United States—New York, Chicago and Philadelphia—are now in the League.

Mr. Goodwin Re-Elected.

Alderman Elias Goodman, of New York, vice president of the League of American Municipalities for New York state, was re-elected to the board of aldermen on November 7.

PAVING AND SEWERS.

The Life of Pavements.

[Paper by George W. Tillson, Department of Highways, Brooklyn, read before the convention of the American Society of Municipal Improvements.]

When one seeks to purchase a new article the first question usually is, what does it cost? And if it be subject to wear there immediately follows, how long will it last? And, although asked second, this latter question can hardly be said to be of secondary importance. For, while the first cost of an article may determine one's ability to buy it, it does not by any means settle its economy, for what is cheap to obtain at first is often most expensive in the end.

So when it comes to the selection of a paving material the question of durability is of the utmost importance. What is the life of a particular kind of pavement? The question is often answered off hand by the tyro positively, and with little hesitation, but the engineer of experience who has seen a pavement last a certain time on one street, and twice as long on another, has seen the result of this condition here and another there, gives his reply hedged in by so many provisions that at first sight it would seem to be of little value. But when it is carefully studied the discovery is made that these restricting conditions are just what are required to adapt the reply to any particular case that may happen to be in point.

To the study then of the varied conditions affecting the life of a city pavement this paper will be given.

The two great agents that tend to destroy a pavement are traffic and the atmosphere. The former is variable, and its effect varies directly according to the amount applied under certain conditions. The action of the latter is constant, depending somewhat upon the climate, but principally upon the nature of the paving material.

Traffic and the atmosphere act positively, and their results can be measured. At the present time it may be said that there are four materials being used in street pavements, stone, brick, asphalt and wood. The action of traffic and the atmosphere is very different upon these materials as affecting durability. It is safe to say that the life of stone and brick (taking it for granted that none of their kind of a quality to be acted on by the air would be used) in a pavement depends, other things being equal, directly on the amount of traffic they sustain, but that statement would not be true of asphalt and wood. For should the traffic be light the life of the pavement would be ended by the action of the atmosphere. Asphalt, not to such an extent as wood, but it is well known that an asphalt pavement deteriorates materially under the oxidizing effect of the air, even if it have little or no traffic.

It must be remembered, also, that there are two ends to all pavements, the physical and the economic end. The former comes at a time when the pavement is so worn out that it cannot be repaired and must be entirely relaid; the latter when the cost of repairing is such that it will be cheaper to relay it entirely than

to spend any more money on repairs. These two ends do not necessarily come at the same time. The former test will generally be applied to stone, brick or any block pavement, and the latter to asphalt or macadam. When a pavement is made up of moderately sized parts of practically the same character and texture, the wear on these parts is approximately the same and the repairs necessary are generally relaying old material, rather than furnishing new. But when the pavement is made up of parts so small that they must be consolidated into a continuous whole before they can be available it is different.

The physical end of a pavement can be determined by observation. Blocks wear on account of the abrasion and impact. Granite wears in two ways, by chipping and rounding off of the corners, and the gradual grinding off of the blocks under the friction of wheeled vehicles. When the blocks are of the harder granites or traps the former action takes place. The softer granites and the sandstones wear down smoothly with flat surfaces, and in time the blocks actually become worn out, the pavement becomes rough, horses stumble, and it is soon seen that the street should be repaved.

Asphalt and macadam wear away, and new material can be added in large or small quantities as may be desired, and the physical life of the pavement prolonged indefinitely. It is then that the economic test is applied to ascertain when the pavement should be renewed. Assume that a street is paved, but the expense of keeping it in good condition is considerable, and this question arises, shall the repairs be continued, or shall an entire new pavement be constructed?

Let N = Life of proposed pavement.

C = Cost.

I = Rate of interest.

R = Estimated cost of repairs if distributed over entire life.

A = Sinking fund to be paid each year to equal C at end of N years, then $A + CI + R \cdot N$ = annual cost of a pavement.

Take, for instance, an asphalt pavement, and let $N = 15$; $C = \$150$; $I = 3\frac{1}{2}\%$; $R = \$0.40$. A will = .0807, and the equation becomes $.0807 + .0525 + .0267 = 0.1599$, or, if the street be repaved, it will still cost annually 0.16 until it is renewed. It must be remembered that C is equal to first cost, less the value of foundation and other material, if any, at time of renewal. From the above it would seem that it is economy to repair an asphalt paved street, rather than to repave it when the cost of repairs is much less than 0.16 per yard, provided the assumption of 15 for a value of N is correct. As if there is any error in the other values they must be too small rather than too large.

Let, then, $N = 20$, other values being the same (R being obtained by taking a guarantee period of five years, and assuming cost of repairs four cents per yard per year for remainder of life), and the equation will become $.0531 + .0525 + .03 = 0.1356$ as the annual cost when N is taken at 20 instead of 15. The author be-

lieves that this is the engineering and the only true way of determining when an asphalt pavement should be relaid. The only element to modify this principle is the inconvenience business men and merchants may be put to by having repairs made on a street too frequently. The determination of this must be a matter of judgment to be applied in each particular case. But the principle of the formula is right, and when cities have had a few years more experience with asphalt there will be no trouble in determining the true values of the variables.

Coming down now to the actual conditions by which traffic is modified in its action on pavements, it will be seen that there are five, viz: Character of pavement; width of roadway; presence or absence of street car tracks; state of repairs, and how well cleaned.

The one great agent that acts upon a pavement is, of course, the traffic that passes over it. This is very hard to measure, and very few attempts have been made to do so in the United States. The custom has been to speak of heavy, medium and light traffic streets with but a very vague idea of what these terms meant. Forgetting, too, that as so used they are only comparative, as medium traffic in a large city would generally be heavy traffic in a small one. Traffic has generally been measured in this country by assuming a certain weight for vehicles of different descriptions, and by counting the passage of the vehicles on a street during a given time thus arrive approximately at the amount of tonnage passing over it. The results are generally given without regard to the width of roadway, making it very difficult to compare results arrived at in the different cities. In England attempts have been made to reach more scientific results, and the tonnage per yard of width of roadway per day or per year has been taken as the unit. This enables one to compare directly the traffic of one city with that of another, although it must be remembered that the passage of ten vehicles weighing one ton each register the same as one ten-ton truck, when it is probable that the latter would do much more damage than the former. This method, however, is probably as definite as is practicable.

In 1885 General F. V. Greene had a series of observations taken in many of the principal streets of the leading cities of this country to determine the amount of traffic. The total number of vehicles passing between 7 a. m. and 7 p. m. was counted. The following are some of the results, the largest number being given in each case so as to give an opportunity for comparison:

| | |
|---|-------|
| Broadway, New York..... | 7,811 |
| Broad street, Philadelphia..... | 6,081 |
| Devonshire street, Boston..... | 5,362 |
| Douglas street, Omaha..... | 4,752 |
| Fifteenth street, opposite Treas- ury, Washington..... | 4,520 |
| Clark street, Chicago..... | 4,389 |

While the author would not state that an attempt was made to get the heaviest traffic street in each case, persons familiar with these cities will recognize that they are representative streets.

In Paris the vehicles passing on the following streets in twenty-four hours were:

| | |
|---------------------------------|--------|
| Rue de Rivoli..... | 42,035 |
| Avenue l'Opera..... | 29,500 |
| Rue Croix des Petit Champs..... | 20,480 |
| Rue St. Honore..... | 19,672 |

And in London:

| | |
|----------------------------|--------|
| King William street..... | 26,793 |
| Grace Church street..... | 15,585 |
| Queen Victoria street..... | 16,531 |
| Cheapside..... | 15,200 |

And—

| | |
|---|--------|
| George street in Sydney, Australia..... | 11,960 |
|---|--------|

Great Howard street, Liverpool, sustains a traffic of 216,000 tons per yard of width per annum.

Showing very plainly that the pavements in the large European cities are subjected to much more travel than those of this country.

Width of Roadway: The distance between curbs affects traffic, as it tends to scatter or congest it. If a street is to sustain a certain amount of tonnage the greater surface it can be spread over the less it will injure the pavement. This is also true when the load is reduced to a unit of width, especially if the roadway be small and the traffic continuous. In a narrow, well traveled street, the carriages and trucks move in well defined lines, one behind the other, so that it is impossible to scatter it and subject the entire surface to anything like uniform wear. Ruts are worn in the pavement and the time comes for its renewal long before it would have, could its work have been distributed evenly over it.

CHARACTER OF PAVEMENT.

By this is meant the detailed method of its construction. The laying of asphalt has been practically standardized, and there is not much difference in the methods of the different companies. But granite, brick and wood vary much as to foundation and joint filling. Wood, too, is often treated chemically so as to entirely do away with the climatic action, and this renders it necessary to study it from the standpoint of traffic only. Different kinds of wood are used in different sections, each having a different life as a result of the physical as well as the chemical action.

To obtain the best results from block pavement it should be laid in such a manner as to receive the traffic vertically upon the face of the blocks, and so substantially that the blocks will maintain their position while in use. To accomplish this the foundation must be such as to sustain the loads liable to be imposed upon it, and the joints filled with some firm and enduring material. This is necessary for two reasons, to keep the blocks in position and to prevent water from reaching the foundation and injuring it. While the fulfillment of these conditions adds to the expense, the life of the pavement is prolonged sufficiently to more than compensate for it.

PRESENCE OR ABSENCE OF A STREET CAR TRACK.

A street car track has a great bearing on the action of traffic. It concentrates travel, and in a street where the tracks are in frequent use practically reduces the roadway to the space outside the rails with all and more of the evils of a roadway of that width. More because there is almost no opportunity to get out of the regular route by using the centre which sometimes happens in a roadway without tracks as wide as the vacant space. True, much travel is accommodated on the rails, but the gauge of the heaviest trucks is greater than that of

the cars, so that one wheel runs on the pavement, and, being confined absolutely to the same place, soon wears a rut in the hardest blocks.

In the fall of 1896 Kent avenue, Brooklyn, was paved with the best granite that comes to the New York market, on a Portland cement concrete base, with tar and gravel joints. This street is probably subjected to as many heavy loads per day as any street in Greater New York, is 36 feet wide and has a double line of street car tracks. On one side of it are the big sugar refineries, which send daily over this pavement in their busy time some 1,000 or 1,200 loads of sugar, weighing about eight tons each. It seems almost impossible for the teams to travel without the wheels of one side being in a car track. This brings those of the other side about eighteen inches from the corresponding rail. After the pavement had been thrown open to traffic for six months a rut perhaps an eighth of an inch deep was worn in the blocks, and on the crosswalks was plainly visible. The sugar companies who had paid one-half of the cost of the pavement made a strong effort to scatter the teams, sending men on the street for this especial purpose. But it was only driving the wheels from one rail to another, and soon other ruts were formed, and to-day, after three years' service, ruts from 3-4 of an inch to 1 1-2 inches deep are found in several places. Contractors understand this fact, and where the guarantee is required for any long period bid appreciably higher for pavements on street car streets. In 1897 bids for asphalt pavement in Brooklyn on sixty-eight streets free from tracks averaged \$0.98 per square yard, and \$1.26 per yard on eleven streets where the tracks were present. Few cities have kept their repair account so that this extra cost can be gotten at exactly, but in an article read before the society at its last session Mr. Guthrie showed that it was \$0.148 on business and .047 on residence streets with street car tracks, and 0.112 on business and .048 on residence streets without tracks, in the city of Buffalo for asphalt pavement.

STATE OF REPAIRS.

The condition in which a pavement is kept as to repairs is of vital importance. If holes, depressions or other defects are allowed to remain for any length of time the material is abnormally worn and blocks rounded off to an amount probably four or five times what they would have been had they been in their normal position. Few officials who have the maintenance of pavements in charge appreciate this, but should they examine granite blocks or brick that have been loosely paved in a trench and allowed to remain there for some time sustaining their usual amount of travel they will surely be convinced. If this be true of the hard block pavements how much more so is it of such materials as macadam and asphalt. Watch a small hole in either of these pavements and see how rapidly it increases under traffic if it receive no attention, and how much more it costs to repair it after a few weeks of neglect, and it will be seen how rapidly neglect in this respect tends toward the economic end of any pavement, but particularly one of asphalt or macadam.

CLEANLINESS.

At first thought it may seem that this does not have much to do with the action of traffic, but a little reflection will soon dissipate that idea. When a pavement is clean the wheels and the horses' hoofs bear distinctly on the

paving material, and it must sustain the entire friction, and its reaction wears out the pavement. If, on the other hand, it be covered with a cushion of dirt, the pavement acts principally as a foundation. The author once inspected a brick pavement said to have been down five years and to be in as good condition as when laid. It was in a small town where the streets were seldom cleaned and an inch or more of street refuse had to be scraped off before the surface could be seen. An advocate of a particular brick for paving purposes, in describing a pavement of it which he had recently examined, naively said: "When I dug down to it I found it just as good as it ever was."

It is said that when the Forum Trajanum was cleaned by the French in 1813 the ancient Roman pavements were found in good condition under some twelve feet of rubbish. While this is probably an extreme case, it is very likely that a modern pavement of imperishable material would have a long life under such conditions. At the last meeting of the National Brick Manufacturers' Association, when the question of how to minimize the noise of a brick pavement was being discussed, a member arose and gravely asked if our cities did not keep our streets too clean; if brick pavements would not last longer and make less noise if a cushion of dirt was allowed to remain on them. Although the question was answered in the affirmative, it was decided that officials in large cities would keep the streets clean even at the expense of the brick pavements. Asphalt and wood on the contrary, should be kept clean, in order to add to their durability, as rubbish of any kind collects moisture and so hastens the decay of these two materials.

The action of the atmosphere is shown under the examples given of the life of several wood pavements.

Having now somewhat hastily discussed the different influences that modify the action of traffic it will be in order to take up the different kinds of pavements, and from representative examples deduce a general conclusion as to how long a certain pavement ought to last under different conditions.

GRANITE.

It has already been stated that the foundation of a pavement affects its durability very much. Granite blocks are generally laid in two ways, viz.: On a concrete base with joints filled with tar and gravel, and on a sand cushion with sand joints. The resulting pavements must be considered as being in separate classes. The reason why the same granite wears out more quickly when laid on sand is because the blocks follow any inequalities in the foundation and the sand in the joints is often washed out, and allows more or less water to percolate down to the foundation, causing unequal settlements. All of these actions affect the stability of the blocks and often cause their displacement, thus preventing the traffic from being applied in accordance with the principle previously laid down, i. e., vertically upon the face of the block, and the result is abnormal wear. Probably the best example of a first class granite pavement is that upon the approaches of the New York and Brooklyn suspension bridge. This was thrown open to traffic in May, 1883, and consequently has been in use about sixteen and one-half years. During this time it has been subjected to a severe and continuous traffic. The roadway is sixteen feet wide. The dimensions of the blocks are 3 to 4 inches wide by 8

to 9 inches deep and 9 to 14 inches long. These were laid on a concrete base and a 2-inch sand cushion with three-quarter-inch joints between courses. These joints were partially filled with tar and gravel, which was thoroughly consolidated with a calking iron driven home by a heavy hammer when the joint was refilled as before. This pavement has received practically no repairs up to the present time, and Mr. Martin, engineer of the bridge, estimates its further life of ten years, or twenty-six years in all, for a pavement that probably sustains a heavier tonnage per foot of roadway than any street in this country. An article in the Electric Engineer Magazine states that on streets near the docks in Liverpool, where the traffic was 360,000 tons per yard of width per annum, the average wear was .02 of an inch per annum. In Leith, Scotland, the repairs to granite are nil for the first 10 years and from that time to 25 years an average of 4 cents per yard per year. In Brooklyn, Clinton street was paved with granite on a sand foundation about 23 years ago. This is a residential street and has a moderate, though not a heavy, traffic, has received absolutely no repairs and is in such a condition to-day that from 8 to 10 years further wear may be expected of it. The authorities of the following foreign cities give as the life of granite pavement, Paris, Liverpool and Edinburgh, 30 years each, and Glasgow as high as 50 years. Engineers of the United States do not as a rule assign so long a life and it is doubtful if our granite is as durable as that used in Europe, so that it is reasonable to suppose that their pavements will last longer, despite their greater traffic. It would seem fair then to estimate the life of a granite pavement on concrete with tar and gravel joints at 25 years and on a sand base at 20 years.

WOOD.

It is extremely difficult to generalize upon the life of a wood pavement. It is laid of so many different varieties of material, in so many different ways as to foundation and joint filling, and with such varied chemical treatment that a conclusion in one case will hardly have an application in another. For instance, the ordinary cedar block pavement as laid in Chicago and other western cities, requires replacing about every seven years. A similar cypress block pavement, laid in Omaha in 1888, was taken up in 1892 and replaced with brick. Nicholson pavement, laid in Brooklyn in 1869, had an average life of about 6 years, and in St. Louis of 6 years 3 months. A hemlock pavement was laid in Philadelphia as early as 1839, and was renewed in four years. Wood wore as follows in London: On Sloane street, .065 of an inch, traffic, 279 tons per yard of width per day; on Fleet street, .456 of an inch, traffic, 1,360 tons per yard per day; on London Bridge, King William street, the blocks wore 2 5-8 inches in 3 years and 2 months, where the traffic was 1,200 vehicles per yard for twelve hours. Mr. Haywood made the general statement that wooden pavements wore from .2 to .3 of an inch per year under a traffic of from 300 to 660 vehicles per yard for twelve hours. The Place de la Concorde, Paris, was paved with wood in 1885, and relaid in 1895. The average annual wear of nine different streets was .1557 inch, the variation being from .0746 to .2908 inch.

Wood of the eucalyptus family has been used very successfully in Australia. It was first laid in 1880, and in a paper written by Mr. W. A. Smith, M. Inst. C.

El., in 1894, many interesting facts are found. The blocks, 3 inches wide by 6 inches deep and 9 inches long, were first dipped in tar and laid on concrete. The first pavements were laid with 1-inch joints filled with stone screenings or bituminous matter, but experience demonstrated that better results could be obtained with close joints, except on steep grades. Mr. Smith states that on taking up a portion of a pavement laid with three-eighth-inch joints filled with Portland cement grout, which had been down six years, dry rot had set in wherever the cement had touched the blocks, while on the other streets, where the joints had been filled with a mixture of tar and basalt screenings, the wood was found to be perfectly sound; and although it had been in use eight years, it was practically as good as when laid, and the greatest wear observable was 1-16 inch under a daily traffic of 25,000 tons. On another street the blocks had worn 9-16 inch in thirteen years. Mr. Smith estimates that Australian hard wood will last twenty-one years in a pavement and sustain a daily traffic of 1,200 tons per yard of width.

Mr. George W. Bell, formerly U. S. Consul to Sydney, N. S. W., states that after eleven years several blocks taken from George street had worn less than one-half inch. The roadway of this street is 48 feet wide, and is subjected to very heavy traffic. Mr. Bell estimates the life of the pavement at 20 years.

In 1895, a pavement was laid of Australian harri karri wood on Twentieth street, between Broadway and Fifth avenue, New York city. The blocks were as above described and after having their lower half dipped in hot tar were placed closely together on a concrete base, an open joint 1 inch wide being left at the curb for expansion. This joint was afterwards filled with asphalt. At the present time there are a very few blocks on this street that show signs of decay, but as a whole, where untouched by the plumber, the pavement is in as good condition as when laid.

In European cities the duration of wooden pavements is: Paris, 8 years; Liverpool, 15 to 18 years; Glasgow, 6 years; Edinburgh, redwood 8 and Australian wood 15 years, and London, 5 to 8 years for Baltic deal and 12 years for Australian.

The Tenth street viaduct in Omaha was paved with sawed cypress blocks in 1890. An inspector was sent south when the blocks were purchased, who carefully examined all lumber before it was sawed so that none but the best would be used. This pavement lasted 9 years.

From the above figures it will be seen how impossible it is to deduce a positive result. But it does seem justifiable to conclude that a wood pavement that requires renewing in this country in less than from 10 to 15 years should never be laid.

ASPHALT.

This material has now been in general use in this country for about 16 years. It has been laid under very different conditions, often by inexperienced workmen, and on varied foundations, so that sufficient data has not been collected to give conclusive results. Many pavements have failed in attempting to economize by utilizing old material on the street. This has often proved fatal economy, as asphalt depends entirely upon its base, the asphalt itself being only the carpet laid upon the foundation floor beneath. When the floor breaks the carpet must fail.

The following tables have been com-

piled from statistics from Washington, Buffalo, Cincinnati and Omaha, showing the cost of asphalt repairs under certain conditions, in an attempt to ascertain when the economic end of an asphalt pavement comes. Before considering them it should be stated how the repairs were paid for and the tables were made up. Washington pays a price in bulk for material used; in 1897 it was for skimming or heater work, 95 cents per cubic foot, and where old material is entirely removed, for wearing surface, 52 cents, and binder 30 cents per cubic foot, measured in the carts. Buffalo pays per square yard for actual work performed; the price in 1897 being for skimming 98 cents and for resurfacing \$1.46, while in 1898 it had fallen to \$0.64 and \$1.05, respectively. Cincinnati paid a lump sum per year for the first and second five years after expiration of guarantee averaging .07½ cents per yard for the first and 14 cents for the second period over the entire area. The contract for the second period is still in force. When the original guarantee expired in Omaha in 1888, a contract was entered into with the asphalt company to keep all the streets paved at that time in repair for 10 years at a cost of 8 cents per yard per year.

Here are four different systems of making repairs. It will be readily seen that in deciding what it will cost to repair a pavement 5, or, as was the case in Omaha, 10 years, in the future at a time, too, when no asphalt pavement had been down 15 years, any company must make a guess at the cost and that the guess will be made on the safe side.

Table No. 1 shows the average annual cost per yard for asphalt repairs after the expiration of guarantee period.

Table No. 2 shows the average cost per yard for each year after guarantee has expired. The figures being compiled from the reports of 1897, for Washington and Buffalo, and from personal information from Cincinnati and Omaha.

TABLE NO. 1.

| Year out of guarantee. | Washington. | Buffalo. | Cincinnati. | Omaha. |
|------------------------|-------------|----------|-------------|--------|
| 1 | .000417 | .0132 | .075 | .08 |
| 2 | .00159 | .0234 | .075 | .08 |
| 3 | ..... | .0229 | .075 | .08 |
| 4 | ..... | .0391 | .075 | .08 |
| 5 | .0071 | .0521 | .075 | .08 |
| 6 | .0143 | .0916 | .0858 | .08 |
| 7 | .03616 | .0749 | .0936 | .08 |
| 8 | .04518 | .0502 | .0894 | .08 |
| 9 | .04421 | .0631 | .1039 | .08 |
| 10 | .04815 | .0219 | .1075 | .08 |
| 11 | .03816 | .0200 | ..... | .0754 |
| 12 | .02318 | .0280 | ..... | ..... |
| 13 | .0747 | .0415 | ..... | ..... |
| 14 | .1223 | ..... | ..... | ..... |
| 15 | .0773 | ..... | ..... | ..... |
| 16 | ..... | ..... | ..... | ..... |
| 17 | .0241 | ..... | ..... | ..... |

TABLE NO. 2.

| Year out of guarantee. | Washington. | Buffalo. | Cincinnati. | Omaha. |
|------------------------|-------------|----------|-------------|--------|
| 1 | .0039 | .029 | .075 | .08 |
| 2 | .0074 | .057 | .075 | .08 |
| 3 | .045 | .051 | .075 | .08 |
| 4 | .034 | .085 | .075 | .08 |
| 5 | .054 | .074 | .075 | .08 |
| 6 | .057 | .084 | .140 | .08 |
| 7 | .063 | .056 | .140 | .08 |
| 8 | .086 | .042 | .140 | .08 |
| 9 | .072 | .027 | .140 | .08 |
| 10 | .080 | .031 | .140 | .08 |
| 11 | .035 | .040 | ..... | .03x |
| 12 | .031 | .040 | ..... | ..... |
| 13 | .033 | .106 | ..... | ..... |
| 14 | .026 | ..... | ..... | ..... |
| 15 | .025 | ..... | ..... | ..... |
| 16 | .128 | ..... | ..... | ..... |
| 17 | .031 | ..... | ..... | ..... |

The guarantee period in every case is 5 years, except for the streets paved in Buffalo in 1886, when it was 8 years. Applying now the formula presented for ascertaining the economic end of a pavement, it will be seen that Cincinnati has

about reached the limit where new pavements are required. As a matter of fact, this 14 cents being an average, several streets have probably passed the point where it is profitable to repair them. Omaha's price being the same for the whole time gives no information, but with the exception of the thirteenth year after laying in Buffalo and the twenty-first in Washington, none of the others seem to be suffering from use or time. It will be noted, however, that about midway in the records of the last two cities are four or five years where the cost appreciably exceeds those immediately before and after them. This probably means that the repairs on some streets were abnormally high during those years. It must be remembered also that while these figures represent cost they do not necessarily indicate the relative amount of work done, as by the reduced price per yard in Buffalo for 1898, over 1897, would allow about 40 per cent. more resurfacing to be done without increasing the cost.

No arbitrary life then can be assigned to an asphalt pavement. Paris allows it 15 years, Liverpool 12 and Edinburg 12 to 15 years.

In Leith, Scotland, one asphalt street averaged 5 cents per yard annually for 15 years succeeding the third year after it was laid.

The author, in the light of figures herein given, would consider that in the United States an asphalt pavement properly laid and maintained should last from 15 to 20 years under average conditions.

Since this paper has been written the report of the board of public works of Buffalo for 1898 has been received. This shows the average cost per yard of all asphalt maintained in Buffalo during the last four years to be 1895, \$0.067; 1896, \$0.0439; 1897, \$0.0480; 1898, \$0.0288. These, it must be remembered, are averages. The engineer in the same report submits a list of 27 streets which he recommends for resurfacing, as they have cost a total of from \$0.2234 to \$1.20 per yard for the last four years. Only 2 3-4 per cent. of the entire pavement under maintenance was repaired in 1898, as against 5½ per cent. in 1895.

BRICK.

As at present laid, brick pavements have not been in use long enough in this country to enable one to make anything more than an estimate of their probable life. The early pavements were laid in small cities where the travel was light and where the streets were not kept clean. On the other hand, the brick as compared to those of the present time were poor and poorly laid. A brick was too often considered to be a brick and one as good as another. Many experiments were tried with foundations, sizes, and material for joint filling, and even now these items are not all satisfactorily settled. It is generally considered by engineers that sand is the poorest filler, yet Mr. Cappelen, city engineer of Minneapolis, states in his report for 1898, that when that city asked for bids for furnishing brick for the city's use, with a 15-year guarantee and allowing the manufacturers to state their preferences for a joint filler, one firm preferred sand for that purpose and refused to guarantee its brick for more than five years unless sand were used.

Many of the early pavements were very durable. One in Bloomington, Ill., laid in 1875, was renewed in 1894, when the bricks were worn off ¾ of an inch. Another in Charlestown, W. Va., lasted still

longer. Many others, however, failed quickly on account of poor material being used and bad construction. The paving brick of to-day are very different from those of 20 years ago, and they are laid much more intelligently. In his report for 1897 the city engineer of Des Moines estimates the life of a brick pavement in that city to be from 12 to 15 years on a business street and from 25 to 30 years on a residential street. The city engineer of Peoria, Ill., estimates the life of a brick pavement at 25 years, and the engineer of Bloomington, Ill., at from 15 to 20 years. The superintendent of water works at Steubenville, Ohio, writes that the first brick pavement was laid in 1884, is in good repair at the present time and will last ten years longer without repairs.

In 1895 Nevins street, Brooklyn, was paved 22 feet wide with Metropolitan blocks from Canton, Ohio. The street has a moderately heavy and continuous traffic. During the present summer the brick were measured in the centre of the street and except in a few cases there was no perceptible loss. It seems safe to predict for this pavement a life of from 10 to 12 years, despite the traffic. In a residential portion of the city it would surely last 50 per cent. longer.

Philadelphia, where there is probably more miles of brick pavement than any other city in the world, estimates its life at 10 years. The author, however, thinks he is conservative in assigning it a duration of 15 years when the brick are well vitrified and properly laid.

MACADAM.

This pavement can be truly said to have no end if properly cared for, but it requires an almost constant infusion of the elixir of repairs to bring about this eternal life. The exact amount depends upon the traffic and character of the stone, varying greatly in different cities. Nashville, Tenn., renews some of her streets twice in one year. One technical journal states that a street in St. Louis has had enough broken stone spread upon it to raise its surface 22 feet. In 1884, in London, macadam on Parliament street cost \$0.70, on Whitehall street \$0.71, and on Victoria street \$0.50 per yard for repairs. Glasgow maintains her macadam streets at an annual cost of \$0.12 per yard, while Paris, in 1893, paid \$0.44 for the same purpose. The author will not attempt to assign a limit for macadam.

In summing up the conclusions arrived at in this paper it must be borne in mind that the results are very general, subject to many modifications, but based upon good material being laid in a proper manner and each pavement under conditions fairly favorable to its use.

The estimated life then is for

Granite, on concrete, 25 years; on sand, 20 years.

Brick, 15 years.

Wood, 10 years.

Asphalt, 10 years.

Brick Paving.

Mr. L. M. Hastings, who as city engineer of Cambridge, Mass., has made a special study of brick pavements, presented a paper upon that subject last month before the American Society of Municipal Improvements, at Toronto, Ont., which is of considerable value to those interested in good and durable pavements for city streets.

Although the manufacture of paving brick is a comparatively late industry, its production is rapidly increasing, and although the product shows a wide vari-

ation in its properties, still the quality of the product in many factories is being watched and studied with all the facilities science affords.

From the pavements examined by Mr. Hastings in the cities visited by him, some general classification of paving brick and its application may be made. Thus the shale brick and the class made from a mixture of shale and fire clay seemed hard, dense and heavy, with a tendency towards brittleness, and were apparently best adapted for streets with heavy traffic if laid on a strong concrete base and their joints well filled so as to prevent the chipping of edges and corners. Fire clay brick, being lighter, softer, more porous, less liable to chip and crack, were better adapted for a residential street or one carrying light traffic, on account of their being more subject to attrition by wheels and hoofs. Mixed brick were also observed to be doing good service, and Mr. Hastings's notes upon the manufacture of brick are full of interest to users. Brick of a darker color and harder character were seen to be doing better service than those of lighter color and softer quality. No particular agreement as to size seems to have been followed, but uniform hardness attained by careful burning and the culling out of inferior brick before laying is of great importance.

Careful attention should also be paid to the kind of jointing material used. This is of several kinds: Sand, pitch, Murphy grout and Portland cement, each of which has its objections and good points. Sand is the least expensive, but soon washes out, leaving the edges of the brick unsupported and liable to become chipped. Pitch tends to soften too much in hot weather and run toward the gutters. Murphy grout is hard and elastic, but has proved uneven in its results; while Portland cement containing the smallest amount of free lime is perhaps the most satisfactory. It is now thought that the tendency of the lime to swell with age and absorption of moisture, thereby raising the bricks from their foundations may be overcome by introducing, at intervals of twenty-five to thirty feet across the street and at both curbs, an expansion joint of pitch which will take up any movement due to the swelling of the filler.

Considerable attention is paid to foundation. For heavy traffic and poor natural conditions, a six-inch layer of American cement concrete on a well prepared and rolled base is probably the best, provided a sand cushion one or two inches thick is placed between the concrete and the brick. Cracked stone has been used with less satisfactory results; it is, however, possible to obtain a satisfactory and economical base, Mr. Hastings believes, if the cracked stone were used without screening, covered by a layer of sand or fine gravel, and then wet thoroughly and rolled. Where clay soil is encountered careful attention should be given to under-drainage. All sewers and pipes should be laid to the curb line before the pavement is put down.

Municipal Street Cleaning.

On September 1 the new street cleaning plant of the city of Columbus, Ohio, was put in operation under the charge of Director of Public Improvements Kaufmann, and never before have the improved streets of the city been kept in so clean a condition as during the past two months.

The plant consists of four Austin street sprinklers of the latest improved manufacture, five Austin special steel

street sweepers, one pickup street sweeping machine and one Austin gutter machine, in addition to 22 small carts, operated by the 22 "white wings" in the city's employment, and a number of dirt wagons.

The large machines and the system which their use embraces employs about 40 men, who are all dressed in blue uniforms to distinguish them from the "white wings."

The "white wings" are under the supervision of Superintendent Condon. The total payroll of the first week of the complete street cleaning brigade, amounted to \$1,036.37. For this amount of money 3,488 great squares of 10,000 square feet each were cleaned, representing 223 miles of street, 30 feet in width. The average price per square was 29.7 cents and the lowest was 21 cents. In addition to the foregoing the payroll of the machinist, bookkeeper, labor at yards, etc., amounted to \$145.55, the first week the complete plant was in operation.

Street Cleaning in Cleveland.

The Cleveland, Ohio, council has appointed a special committee "to investigate and report as to the most feasible plan of street cleaning under the so-called block system, with reference to the cost of same, the necessary legislation to provide for the employment of men, and the method of creating revenue for keeping the city streets in a clean and sanitary condition." The members of the committee are all in favor of the block system, meaning hand sweeping, and they promise to provide for cleaning most of the paved streets of the city in this way next year.

Mr. Cowley, the superintendent of streets, has already submitted a report to the director of public works regarding plans for cleaning the down-town streets under the block system. He proposes to put "white wings" at work in the territory bounded by Lake, Erie, Huron, Woodland, Ohio, Canal, Ontario, Michigan, South Water and Water streets. He says: "To keep the streets in this section clean by the present system they should be swept at least fifteen times per month. At the present contract rate this would cost \$1,950. To this must be added an inspector at \$94.50, a total of \$2,044. If waste paper and other rubbish were picked up, the expense would be more than the above sum. The cost per day under the block system would be: Sixty laborers, at \$1.50, \$90; four teams, \$16; three inspectors, \$6.75; a total of \$112.25. Figuring twenty-six days in the month the cost would be \$2,931.50."

"From my experience with the present system," continues Mr. Cowley, "and careful observations in other cities of the working of the block system, I have no hesitation in asserting that under the latter system the streets would be kept clean and the city would receive an adequate and satisfactory return for the money expended. The man in charge of each block could be clothed with authority to enforce the ordinances relating to waste paper, etc. There would be a great saving, too, in the expense of cleaning catchbasins, as under the present system the basins become clogged with sweepings every time a street is flushed."

Will Investigate Sewage Disposal.

Dr. E. H. Jenkins, of New Haven, has reconsidered his earlier decision not to serve on the new state sewerage commission, and has been elected chairman of that body. Its immediate plans are for

an investigation of sewerage problems in the region north of Norwich, and, more generally, a study of sewage disposal in this country and abroad. After the best plan has been fixed upon the commission will try to induce one of the cities of the state to test it as an example and precedent for other municipalities.

The problem in Connecticut is an extremely grave one, now that the courts in several cases have decided damage suits against cities sewerage into running streams. Of the eighteen cities in the state with a total population of not less than 500,000 and containing almost five-eighths of the population in the state, only two, Danbury and Meriden, dispose of their sewage by land filtration. Sixteen cities sewer into waterways. Of twenty-two large borough towns in the state, only two have land filtration, the rest sewerage into swamps or waterways.

In a number of parts of the state the situation during the present long drought has become positively dangerous, notably in the Naugatuck river below Torrington and Waterbury, and in the Hockanum river below the city of Rockville. The city of Hartford will probably bring suit against the city of New Britain to enjoin the latter city from sewerage through Park river.

San Francisco Street Improvements.

The Merchants' Association of San Francisco, with a membership including all the progressive business men of the city, generally carries out its program for municipal improvements. Therefore the following paragraphs in its published declaration will most likely be effective:

All the cobble pavements on business streets should be replaced with modern pavements within two years, and a systematic plan be pursued for improving other pavements in bad condition as rapidly as the funds will permit.

The specifications for paving should be improved and so framed as to admit of asphalt, vitrified brick, wooden blocks and any other desirable materials in addition to the paving materials used at present, and all specifications should require that guarantees shall be given for the maintenance of the pavements for a period of not less than ten years.

Both of these paragraphs have been substantially copied into the platforms of both of the political parties in the present municipal campaign. At this writing the result of the election is not known, but no matter which party wins San Francisco will soon have the street improvements demanded by the Merchants' Association.

New Sewers for San Francisco.

The board of engineers appointed to prepare plans for a complete new sewerage system for San Francisco have submitted their report to the board of supervisors. The engineers have performed their work thoroughly and their plans embrace Mission Flats, Islais Creek, Bay View, Sunset and Richmond districts. One main outlet sewer is to extend from Mission Flats eastward along Montgomery street and under Telegraph Hill by means of a tunnel 2,500 feet long, continuing well into the waters of the bay. The total estimated cost is \$4,600,000, and it is believed that the system, if adopted, can be completed in three years. The engineering board consisted of C. E. Grunsky, Marsden Manson and City Surveyor Tilton, with Rudolph Hering in consultation.

—Washington, Pa., has just installed the Gamewell fire alarm system.

Favors Burning Garbage.

The council of Louisville, Ky., has received the report of the special committee appointed to investigate the methods of disposing of garbage in various cities. The committee made a thorough investigation of the two methods of disposition, to-wit: reduction and cremation. They visited and examined the plants of the Arnold Reduction Company at New York and Boston, the Baynes Reduction Company at Buffalo, using the Merz method, and the Central American Reduction Company of New York at Reading, Pa., using the Russmuller process, also the Dixon Company's crematory plants at Trenton, New Jersey, and Wilmington, Delaware, and the Thackeray incinerator owned by the city of Montreal, Canada, and the Thackeray incinerator owned by the Sanitary Reduction Company at San Francisco. The conclusions of the committee are:

"As between incineration and reduction, so far as the investigation of your committee has extended, incineration has shown itself to have several advantages over reduction. The devices for incineration are much simpler in their construction than those for reduction, and therefore less liable to get out of order and require less skill in their manipulation. The process of incineration is necessarily much cheaper than that for reduction, incineration requiring only the simplest and inexpensive apparatus, while reduction requires complex, and, in many of its parts, costly machinery. This machinery is not only costly to construct, but expensive to drive, requiring boilers and engines of considerable capacity. The products of the process of reduction are of such a character as to soon destroy the various parts with which they come in contact, therefore rendering the plant expensive to maintain.

Municipal Electricians Association.

The next convention of the National Association of Municipal Electricians, which goes to Pittsburg, Pa., will be held on September 20-22, 1900. It was so decided at a meeting of the executive committee held in the office of Superintendent Bosch at Newark, N. J., on October 25. Aside from fixing the date for the next annual convention, the committee approved a number of bills and transacted other routine business. There were present at the meeting President William Brophy of Boston, Treasurer Adam Bosch of Newark, Morris W. Mead of Pittsburg, Will. Y. Ellett of Elmira, F. G. Boyd of Baltimore and Frank C. Mason of Brooklyn. After the meeting Mr. Bosch entertained the members of the committee at luncheon and gave them a drive about the city.

City May Build Gas Plant.

The "Daily Times," of New Brunswick, N. J., is advocating the municipal ownership of a gas plant. Gas sells there for \$1.50 per thousand, and the stock of the New Brunswick Gas Light Company, with a par value of \$20, sells at \$70, and pays 10 per cent. dividends. The "Times" believes that the city could erect a gas plant by issuing bonds, which the plant would pay off in a short time. The "Times" is the official city and county newspaper and voices the sentiments of the men in power, and its advocacy of a principle generally turns out to be the forerunner of the accomplishment of that principle. It is estimated that the sum needed for the plant would be about \$200,000. City of New Brunswick bonds sell at 103 and 104.

Mr. Yerkes on Street Railway Investments.

Mr. Charles T. Yerkes, who is undoubtedly one of the best authorities on all questions pertaining to street railways, read a very interesting paper before the recent convention of the American Street Railway Association at Chicago. Mr. Yerkes' topic was "Street Railway Investments," and his burden was to show how they could be made secure and remunerative. The point he brought out most forcibly was that the security and value of street railway investments depended largely upon the life of the franchises under which the properties are operated. He argued, incidentally and with good reason, that the costly and substantial way in which street railway properties are now built warranted investors in demanding long term franchises.

Mr. Yerkes began his paper with a description of the crude street railways of thirty years ago, when permanency in construction was not obtained and scientific methods of operation were unknown. In those days street railway securities were of no interest to investors. Mr. Yerkes said "it was not until the early eighties that street railway securities were seriously considered as popular investments, and since that time their popularity has continued to increase as time developed the great resources which lie within them." In describing the evolution of the American street railway Mr. Yerkes led up to this paragraph:

We see another change. The great power of electricity was brought into use, the horses were gone, and instead of making our six miles an hour we could go twice that rate. The oil lamps were removed and electric lamps put in their places. As like begets like, the condition of the cars were improved, cleanliness—always an adjunct to electricity—was substituted for uncleanness. The districts of the city were expanded, lines were made in the suburbs, creating new towns, improving the property of the people, increasing the amount of assessment on real estate, until we seemed as though we were living in another world. Aladdin's lamp did not produce any more wonderful changes; and this could not have been done had it not been that the attention of investors, both great and small, had been attracted to the street railways. And what of the great benefits to the people. Instead of the slow, uncomfortable manner of travel, rapid and easy means are given. Points that could not be reached with the old system are brought within easy access. Everything is better and cheaper. While three miles, with the new improvement in days gone by it cost five cents to travel four times that distance can be traveled for the same money. Then it cost a person to ride about two cents a mile, now it costs one-half cent per mile. Why then, I ask, should not a continuance of this condition be encouraged.

That part of Mr. Yerkes' paper which is of peculiar interest to city officials is quoted below:

The most important matter in regard to the security of street railways securities is the length of the charter under which they are operating. This question is of as much importance to the people as it is to the street railways themselves. The longer time that is given to a charter to run, the greater improvements and the more expensive plant can be operated by the companies. That is to say, it can be made more permanent than if the charter was one of short duration, and naturally it would be. If a company has a charter with but a few years to run the improvements will be of a cheap character, commensurate with the length of that charter, and the better the improvements, the better it is for the people, not only for those who own property, but for those who ride and have no property. We see this exemplified daily. Let us ask the question, how many bridges of iron or stone would the steam roads have if their charters ran only for a few years? There would certainly be none, and the speed of the trains would be greatly reduced. Years ago 30 miles an hour was considered rapid traveling, with 20 as an average. Now the rate has been run

up to more than 80, with 45 as an average on fast trains. This latter condition would never have existed if the steam roads had not had charters long to run. Why should not the charters of the street railways be equal to those of steam railways? In fact, considering them all in all, they should be longer. The cost of a steam railroad of today is not nearly equal to the cost per mile of a street railway, even counting all the appurtenances that go with each. One hundred years has been the time granted in this State for a charter to a street railway, and the municipality grants an ordinance for 20 years. That this was wise or unwise at the time that period was designated, I will not argue, but considering that it was a proper time for what we had in street railways then, rails weighing 40 lbs. to the yard, laid on a wooden string piece, this string piece laid on sleepers, five feet apart, cars of cheap class, a lot of horses, good ones, if you please, and a five acre lot in the suburbs where the car barns were erected—this practically constituted their outfit. At the end of 20 years, if there was to be no renewal of the ordinance and the charter was allowed to lapse, what would be the loss? The track, considering that it had been kept in good order would sell say for 20 per cent. of its cost, the cars for about 30 per cent. of their cost, the horses for about 25 per cent. of their cost and the real estate, which had been bought by the company 20 years ago and where in all probability a settlement had since gathered, would sell by the front foot, realizing without doubt twenty times as much as it had cost. There you see there would be much loss if this road had to be given up. But what are the conditions to-day? The street car tracks are laid with heavier material than that used by the steam roads, the power house costs hundreds of thousands of dollars, where the old structure cost but a few thousand, the electric plant on the cars and in the power houses and the wires and poles cost immense sums. So that it can be truly said that the electric plant cost more than ten times as much as the horse car plant. If, therefore, it was right to give a horse car plant a charter for 20 years, the electric plant should receive a charter for 200 years and city ordinances to correspond.

It has been argued that if grants were made extending over a long period of time, other means of transportation might come into existence and these charters would interfere with the adoption of these improved methods.

Let us suppose 50 years ago perpetual privileges had been given to operate exclusive omnibus lines in this city or privileges of the same character had been given to operate ferries across the Chicago river. What would they be worth to-day? Long ago the charters would have been forfeited, simply for the reason that improved methods had rendered them worthless.

But while I feel that the Legislatures should treat the street railways fairly, I also feel that the street railway companies should treat the municipalities and States in the same spirit. I believe that a fair amount of the earnings of the companies should be given to the municipalities in which they are located. There is no doubt but that the street railways are of great benefit to those municipalities and to the public generally and to the property owners, but, at the same time, it is my opinion that a spirit of liberality should be engendered by the street railways toward the municipalities, for the reason that it is through the municipality that they are permitted to transact their business. It is a mutual benefit, with the burden on the corporation. There is no doubt but that the extending of the lines in a large city is a great hardship to the railway company. There is little money to be made out of them for years, and while the company is waiting the property owners and people are being benefitted. The very mention of the fact that a line is to be extended in a certain district causes advances in the value of real estate, and these advances are emphasized when these extensions are really made. There is nothing that has added so much to the health of the inhabitants of a city as the extension of street railway lines. In this city the tenement house district, which would have been a perfect pest-hole, is scarcely to be found. The prairies have been covered with street car tracks, which forces the opening of streets. Cheap lots and cheap homes for the working people and the poorer classes, as well as the well-to-do, are everywhere in evidence. While there may be efforts to influence the people against street railways, they cannot but see these conditions, which are so plainly visible to them, and seeing them, fall to properly appreciate them.

I believe in educating the people, of whom the legislators are the representatives. Every State wherein there are large cities which necessarily have important street railways, should have a commission ap-

pointed to ascertain the condition and requirements of this industry. The commission should be appointed by the Governor of the State and should be composed of intelligent business men of first-class standing who are not interested in street railways. Under no condition should a person holding office or who is ambitious to do so be named. A man of this character is never to be trusted in any affair where courageous opinions are expected. The reports of such committee should have great weight with the legislators.

I believe that all corporations which receive their life from the commonwealth should be subservient to that commonwealth. That there is nothing in their formation or general business which should not be reported to the proper authorities and be subject to investigation. I believe that the law should provide that an intelligent commission be appointed by the Governor of the State in the same manner as is now done in this State in regard to the Commissioners of the Park System. The duties of this commission would be to see that the laws concerning street railways are carried out and that the companies have the protection to which they are by law entitled. The commissioners should have terms of fifteen years, so as to insure their becoming experts, and receive such salaries as would enable them to live well and take care of their families in a good manner. They should understand when appointed something of the street railway business, and as years pass by their knowledge would increase as also their worth. They should have the power to dictate to the railway companies where new roads should be laid, if at all, and also the kind of new improvements to be used when a railroad contemplated making a change in motive power. They should have the power to regulate the devices to be used for saving life and preventing accidents. With an intelligent, honest commission of that kind, street railway managers would be made more comfortable, the people would be benefitted and the securities of the corporation would be more solid. The advice of these commissioners would be sought and the advice of such men with the experience and knowledge they would naturally have, would be most valuable to any railroad manager. Their reports would be explanatory, and much of the ignorance regarding street railways, which is fostered by our enemies particularly in this part of the country, would be done away with.

To make securities more secure, we must have these different matters fully understood. We must do our business in a straightforward manner, with due consideration to the public, who are our patrons, continuing to increase facilities as opportunities offer, and adopting the most improved kinds of transportation which experience teaches is proper; and last, but by no means least, holding with the kindest regard our employees, who are faithful to us to the end, that there may be perfect harmony between them and the management, and seeing to it that our corporations are able to earn honestly a fair remuneration for the money, time, experience and labor that have been spent upon them.

Hopkins Wins His Suit.

At New Haven, Conn., the court has issued judgment of ouster against Frank P. Cafferty, lamp inspector. Mr. Cafferty was appointed some months ago by the mayor, after Henry Hopkins had been summarily discharged as lamp inspector. Mr. Hopkins, claiming that he could not be legally removed without charges and a trial of same, instituted quo warranto proceedings against Cafferty. Mr. Hopkins has resumed the work of the lamp inspector's office.

May Enlarge Electric Plant.

The committee appointed to report on the advisability of enlarging the city electric plant at Little Rock, Ark., so as to furnish commercial lighting and power estimates that the enlargement can be made for \$50,000. In view of the present financial condition of the city the committee have decided that if sufficient contracts for light and power can be secured from consumers to defray the expense they will proceed to enlarge the plant. Canvassers are now soliciting for contracts.

WATER DEPARTMENTS.

Water Rates in the Larger Cities of the United States.

[Paper read by August Herrmann, Commissioner of Water Works, Cincinnati, O., before the convention of the American Society of Municipal Improvements.]

The question of the amount charged for water is an important one in every city. It is very often the case that officials having the management of water departments are unnecessarily and unintelligently criticised for the reason that the water rates of their respective cities are so much higher than those of other cities to which a comparison has been made. As a rule these criticisms are made by those who have not closely ex-

isting there were so different from those in other cities that an intelligent comparison could not be made. Of the thirty-one cities in the country coming under that heading data has been obtained from all of them excepting the cities of Worcester, Mass., Denver, Col., and San Francisco, Cal.

In some of the cities water rates are enumerated under no less than several hundred items. It would be almost impossible to prepare a table showing these different enumerations and comparisons. However, all of the data obtained will be preserved, and should any of the members of the society desire information on any particular item of charge the same will be furnished on application.

TABLE NO. 1.
Rates charged for water furnished through meters. Prices computed on basis of charge Per 100 cubic feet.

| Name of city. | Rate per 100 cubic feet. | Remarks. | Minimum rate. |
|--------------------|--------------------------|--|------------------------|
| Detroit, Mich. | 1.17 to 3.74 cents | Graduated according to consumption. | 50 cents per month. |
| Buffalo, N. Y. | 1.50 to 4.49 cents | | \$24 per annum. |
| Toledo, O. | 2.62 to 7.48 cents | | \$6 to \$10 per annum. |
| Chicago, Ill. | 2.94 to 7.48 cents | | |
| Kansas City, Mo. | 2.99 to 23.19 cents | | |
| Philadelphia, Pa. | 3.00 cents | | |
| Syracuse, N. Y. | 3.50 to 14.00 cents | | |
| Cleveland, O. | 4.00 cents | | |
| Albany, N. Y. | 4.49 cents | | |
| Louisville, Ky. | 4.49 to 11.22 cents | 700 gallons daily or less, 10 cents. | |
| Baltimore, Md. | 4.50 cents | | |
| Milwaukee, Wis. | 4.50 cents | \$1 per annum for reading meter. | |
| Columbus, O. | 4.50 cents | | |
| St. Paul, Minn. | 5.00 to 10.00 cents | | |
| Indianapolis, Ind. | 5.24 to 14.96 cents | Also a reduction of 1 mill for each 1,000 ft. in excess of 5,000 ft. per month down to a minimum charge of 3.37c per 100 cubic ft. | |
| Minneapolis, Minn. | 5.98 cents | | |
| Pittsburg, Pa. | 5.98 to 14.96 cents | | |
| Nashville, Tenn. | 6.00 to 15.00 cents | | |
| Cincinnati, O. | 6.50 to 8.00 cents | | |
| Newark, N. J. | 6.53 to 11.50 cents | | |
| Allegheny, Pa. | 7.48 cents | | |
| Rochester, N. Y. | 7.48 to 10.47 cents | \$5 per annum. | |
| St. Louis, Mo. | 7.48 to 22.44 cents | | |
| Omaha, Neb. | 7.48 to 26.18 cents | | |
| Brooklyn, N. Y. | 7.50 cents | | |
| Jersey City, N. J. | 7.50 to 13.50 cents | | |
| Boston, Mass. | 8.00 to 14.00 cents | \$15 per annum. | |
| New York, N. Y. | 10.00 cents | | |
| Providence, R. I. | 11.22 to 14.96 cents | | |
| New Orleans. | 11.22 to 26.18 cents | A special rate is made where the consumption is over 10,000 gallons daily. | |

amined into the conditions bearing on this subject in the various cities, simply taking as an argument the prices charged per 100 cubic feet of water in one city as compared with that of another city, or some like basis of calculation, and then charging mismanagement on the part of the department having the high rate. Such a claim is ridiculous. In making comparisons all of the conditions of the department must be taken into consideration, the source of supply, the manner of pumping and repumping the water, the discount on the water bills, the charges against the water fund, and such other matters as would necessarily affect the cost of operation and maintenance.

In gathering the data for this paper it was deemed advisable to secure not only the water rates charged in the different cities, but general statistics that might have a bearing on this subject. As was done last year, the information to be obtained was confined to cities that had a population of 80,000 or more at the last United States census, excepting therefrom the city of Washington, D. C., alone, believing that the conditions ex-

I will present first several tables showing the rates charged for water, taking as a basis the principal items of revenue of water departments. Table No. 1 shows the rate charged for water furnished through meters which, in most instances, is the largest single item of revenue in water departments. In some of the cities water is furnished through meters, giving a price per 100 or 1,000 gallons; in other per 100 or 1,000 cubic feet. The table shows the rate computed on basis of charge per 100 cubic feet.

From this table it will be seen that, of the thirty cities enumerated, twenty have a graduated meter rate, according to the amount of water consumed, while ten have a straight rate. The lowest graduated rate is in Detroit, being 1.17 to 3.74 cents; Buffalo coming next, 1.50 to 4.49 cents per 100 cubic feet, while New Orleans has the highest rate, being 11.22 to 26.18 cents. The lowest straight rate is 3 cents, at Philadelphia, Pa., and the highest straight rate is New York, boroughs of Manhattan and Bronx.

Another big item of revenue of water departments is that received from dwell-

ing houses. As has already been stated, it is almost impossible to take up all of the items for comparison. Table No. 2 shows the rates charged for a six-room dwelling house occupied by one family, containing attic and basement, lot, say from 18 to 20 feet front, two stories high, having the following privileges: One yard hydrant, one kitchen sink, one stationary washstand, one bath, hot and cold water; one self-closing closet, one two-tray laundry, and sprinkling fifty square yards of lawn.

From the table it will be seen that for this kind of a dwelling house Detroit has the lowest rate, viz., \$3.70 per annum. New York (boroughs of Manhattan and Bronx) coming next at \$7 per annum. The highest rate is at New Orleans—\$31.75 per annum. The average rate is \$15.42, fifteen cities being below and fifteen cities above the average.

Table No. 3 shows the rates for a larger dwelling house, viz.: A twelve-room house occupied by one family, containing attic and basement, lot, say from 50 to 60 feet front, three stories high, having the following privileges: One yard hydrant, one kitchen sink, three stationary washstands, two baths, hot and cold water; three self-closing closets and sprinkling 150 square yards of lawn.

From this table it will be seen that for this kind of a dwelling house, Baltimore has the lowest rate, viz.: \$13 per annum; Detroit next, \$13.20 per annum. The highest rate is at New Orleans, \$52.25 per annum. The average rate is \$28.84, sixteen cities being below, and fourteen cities above the average.

Table No. 3, in order to be fully understood, must be carefully analyzed. Taking dwelling houses as an entirety, it is evident that Detroit has the lowest rate, there being a uniform charge of \$2 per annum for one family, regardless of the number of rooms, while additional families are charged for at the rate of \$1 per annum. Philadelphia comes next, having a uniform rate of \$6 per annum, regardless of number of rooms, or families in the building. Minneapolis, Cleveland, Columbus and Toledo also have very low rates. The highest rate of all the cities is New Orleans, La.

The charges for each additional room in a house having over sixteen rooms run from 30 cents per room per annum in Cincinnati, Minneapolis and St. Paul to \$1.50 per room per annum in Allegheny. A number of cities make no charge for extra rooms. Eight cities charge nothing for additional families over one. In the other twenty-two cities the additional family charge runs from \$1 per annum per family in Detroit to \$8 per family in Nashville.

Chicago, Baltimore, Albany, Kansas City and Brooklyn make no charge for the first bath, closet, washstand, etc., in addition to the dwelling house rate, while the other twenty-five cities have special charges for these privileges, in addition to the dwelling house rates.

The following table shows the charges, where same are made, for baths, closets, washstands and laundry tubs in private dwellings.

FIXTURES IN DWELLING-HOUSES,
PER ANNUM.

Where blank spaces are shown, no charges are made, the same being included in dwelling-house rate.

| NAME OF CITY. | Closets (One)..... | Baths—Hot and Cold (One)..... | Stationary Wash- stands (One)..... | Laundry (Tray Each). |
|------------------------|-----------------------|----------------------------------|---------------------------------------|----------------------|
| Cincinnati..... | \$1 50 | \$2 70 | \$ 90 | \$ 50 |
| Milwaukee, Wis..... | 2 00 | 3 00 | 1 00 | 1 00 |
| Nashville, Tenn..... | 6 00 | 8 00 | | |
| Cleveland, O..... | 2 00 | 2 00 | | |
| Columbus, O..... | 2 50 | 2 66 | | 3 33 |
| Newark, N. J..... | 2 50 | 5 00 | | |
| Jersey City, N. J..... | 3 00 | 4 00 | | |
| Detroit, Mich..... | 1 60 | 1 00 | | |
| Allegheny, Pa..... | 2 00 | 3 00 | 1 50 | |
| Omaha, Neb..... | 2 50 | 3 50 | 1 00 | 1 00 |
| Toledo, O..... | 3 00 | 3 00 | 1 00 | 1 00 |
| Syracuse, N. Y..... | 5 00 | 4 00 | | |
| Louisville, Ky..... | 3 00 | 2 50 | 50 | 50 |
| St. Louis, Mo..... | 5 00 | 5 00 | | |
| Rochester, N. Y..... | 2 00 | 2 00 | | |
| Buffalo, N. Y..... | 1 50 | 1 00 | | |
| Providence, R. I..... | 5 00 | 5 00 | 2 00 | 3 00 |
| Pittsburg, Pa..... | 3 00 | 1 00 | 1 00 | |
| Indianapolis, Ind..... | 3 00 | 3 00 | | |
| Boston, Mass..... | 5 00 | | | |
| New Orleans, La..... | 6 00 | 3 75 | 2 50 | 4 50 |
| Minneapolis, Minn..... | 2 50 | 2 00 | 50 | |
| St. Paul, Minn..... | 2 00 | 2 00 | | |
| Philadelphia, Pa..... | 1 00 | 3 00 | 1 00 | 5 00 |
| Kansas City, Mo..... | 4 00 | 4 25 | | |

Chicago, Ill.—No charge for first closet or bath, including in house charge.

Albany, N. Y.—No charge for first closet or bath, including in house charge.

Brooklyn, N. Y.—No charge for first closet or bath, including in house charge.

New York, N. Y.—No charge for first closet or bath, including in house charge.

Baltimore, Md.—No charge for first closet or bath, including in house charge.

From this table it will be seen that five cities make no charge at all for these privileges, the same being in the dwelling house rate. The lowest charge for closets for domestic purposes is in Philadelphia, the same being \$1 per annum. The highest is in Nashville and New Orleans, being \$6 in each of these cities. For baths, the lowest charge is \$1, in Detroit, Buffalo and Pittsburg, while the highest charge is \$8, in Nashville. Twenty cities have no extra charge for stationary washstands in addition to the dwelling house charges, while of the remaining ten, Louisville and Minneapolis charge 50 cents each per annum, which is the lowest, while New Orleans charges \$2.50, which is the highest. Twenty-one cities have no extra charge for laundry tubs, in addition to the dwelling house charges, while of the remaining nine, Cincinnati and Louisville charge 50 cents per annum per tray, which is the lowest, and Philadelphia charges \$5 per annum, regardless of number of trays, which is the highest.

Next is presented a short statement showing the charges for stores and business premises, which is as follows:

—Where no Meters are Attached—

Cincinnati, O.—Each place occupied wholly or in part as a store, office, shop, warehouse, or business of any kind, 500 square feet, or less, \$1 per annum. This price includes only one sink. Fixtures such as closets, urinals, wash-stands, etc., are additional charges, according to number of people and kind of business.

Milwaukee, Wis.—Stores and business premises are charged according to the business transacted and number of persons employed. The rates fixed are for general uses only, and do not include the use of water for special purposes.

Nashville, Tenn.—Stores and business premises are charged according to the business transacted and the number of persons employed. Closets and baths are charged for in addition to regular fixed charges for premises.

Cleveland, O.—Stores and business prem-

TABLE NO. 2.

SIX-ROOM DWELLING-HOUSE.

Where blank spaces appear, there are no extra charges for those fixtures, the same being included in the first charge for the house.

| NAME OF CITY. | 6-Room House as described..... | Yard Hy- drant..... | Kitchen Sink..... | 1 Stationary Wash Stand..... | 1 Bath Hot and Cold Water..... | 1 Self-Closing Water Closet..... | 1 2-Tray Laun- dry Tub..... | Sprinkling 50 sq. yds. Lawn..... | Total..... |
|---------------------------|--------------------------------------|---------------------------|-------------------|---------------------------------|-----------------------------------|-------------------------------------|--------------------------------|-------------------------------------|------------|
| Detroit, Mich..... | \$2 00 | | | \$ 50 | \$ 1 00 | \$ 1 60 | | \$ 60 | \$ 5 70 |
| New York, M., Bx. 1.... | 7 00 | | | | | | | P'b'd | 7 00 |
| Cleveland, O..... | 4 50 | | | | 2 00 | 2 00 | | | 8 50 |
| Chicago, Ill. (2)..... | 7 00 | | | | | | | 2 00 | 9 00 |
| St. Paul, Minn..... | 3 80 | | | | 2 00 | 2 00 | | 1 50 | 9 30 |
| Buffalo, N. Y. (3)..... | 3 50 | | | | 1 00 | 1 50 | | 2 25 | 9 75 |
| Minneapolis, Minn..... | 1 80 | | | 50 | 2 00 | 2 50 | | 3 00 | 9 80 |
| Brooklyn, N. Y. (4).... | 8 00 | | | | | | | 2 50 | 10 50 |
| Baltimore, Md. (5)..... | 12 00 | | | | | | | | 12 00 |
| Cincinnati, O..... | 5 20 | | | 90 | 2 70 | 1 50 | 1 00 | 1 00 | 12 30 |
| Rochester, N. Y. (6).... | 6 00 | | | | 2 00 | 2 00 | | 4 00 | 13 00 |
| Louisville, Ky..... | 6 00 | | | 50 | 2 50 | 3 00 | 1 00 | 1 00 | 14 00 |
| Indianapolis, Ind..... | 5 00 | | | | 3 00 | 3 00 | | 4 00 | 15 00 |
| Toledo, O..... | 5 00 | | | 1 00 | 3 00 | 3 00 | 2 00 | 1 00 | 15 00 |
| Columbus, O..... | 3 98 | | | | 2 66 | 2 00 | 3 33 | 3 33 | 15 30 |
| Milwaukee, Wis. (7).... | 6 00 | | | 1 00 | 3 00 | 2 00 | 2 00 | 2 50 | 16 50 |
| Newark, N. J. (8)..... | 6 25 | | | | 5 00 | 2 50 | | 3 00 | 16 75 |
| Kansas City, Mo..... | 5 50 | | | | 4 25 | 4 00 | | 3 20 | 16 95 |
| Pittsburg, Pa..... | 7 00 | | 1 00 | | 1 00 | 2 00 | | 5 00 | 17 00 |
| Albany, N. Y. (9)..... | 12 00 | | | | | | | 5 00 | 17 00 |
| Jersey City, N. J. (10).. | 10 45 | | | | 4 00 | 2 00 | | 5 00 | 17 45 |
| Boston, Mass. (11)..... | | | | | | 5 00 | | 5 00 | 18 00 |
| St. Louis, Mo..... | 6 00 | | | | 5 00 | 5 00 | | 5 00 | 18 50 |
| Philadelphia, Pa..... | 5 00 | | | | 3 00 | 1 00 | 5 00 | 5 00 | 19 00 |
| Allegheny, Pa. (12).... | 10 25 | | | 1 50 | 3 00 | 2 00 | | 2 50 | 19 25 |
| Syracuse, N. Y..... | 5 00 | | | | 4 00 | 5 00 | | 6 00 | 20 00 |
| Omaha, Neb..... | 6 75 | | | 1 00 | 3 50 | 2 50 | 2 00 | 5 00 | 20 75 |
| Nashville, Tenn. (13)... | 6 00 | | | | 8 00 | 5 00 | | 1 50 | 21 50 |
| Providence, R. I..... | 6 00 | | | 2 00 | 5 00 | 5 00 | 3 00 | 5 00 | 26 00 |
| New Orleans, La..... | 11 00 | | 4 00 | 2 50 | 3 75 | 6 00 | 4 50 | | 31 75 |

(1) New York—Approximated on frontage rates, two-story building, 20 feet front.

(2) Chicago, Ill.—Approximated on frontage rates, two-story building, 20 feet front.

(3) Buffalo, N. Y.—Approximated on frontage, two-story building, 20 feet front; also an excess rate of \$1.50.

(4) Brooklyn, N. Y.—Approximated on frontage rates, two-story building, 20 feet front.

(5) Baltimore, Md.—Approximated on frontage rates, two-story building, 20 feet front.

(9) Albany, N. Y.—Approximated on frontage rates, two-story building, 20 feet front.

(10) Jersey City, N. J.—Approximated on frontage rates, two-story building, 20 feet front.

(7) Milwaukee, Wis.—The rates charged in Milwaukee, under surveys, entitle the consumer to a fixed amount of water only.

(8) Newark, N. J.—In addition to dwelling house charge and special charge, as shown, there is also a charge of \$1.25 for kitchen boiler.

(6) Rochester, N. Y.—Dwelling houses assessed according to valuation. A house whose assessed valuation is \$1,500 or less is assessed at \$4. It is then graduated up to \$7.50, according to valuation.

(1) Boston, Mass.—According to value of building. Estimated value of building at \$3,000 assessed at \$8. Dwelling houses assessed according to valuation. A house valued at \$1,000 is assessed at \$6 per annum. This rate is increased for each \$1,000 or part thereof \$1 per year.

(12) Allegheny, Pa.—Closet and sprinkling rates are figured at minimum prices.

(13) Nashville, Tenn.—This rate is for three persons or less, each additional person \$2.00.

ises, 20 feet front or less, \$3 per annum; 20 feet to 33 feet, \$5 per annum; 33 feet to 66 feet, \$8 per annum; over 66 feet, \$10 per annum. Closets and baths extra.

Columbus, O.—Stores, according to location, 20 feet front or less, \$2 per annum; 20 to 30 feet, \$4 per annum. Each additional foot front over 30 feet, 10 cents. Extra charge for special privileges.

Newark, N. J.—Stores are charged for according to business and number of persons employed. Special fixtures extra.

Jersey City, N. J.—According to the number of feet front and height of building. Special fixtures extra.

Detroit, Mich.—From \$1.20 to \$12 per annum.

Allegheny, Pa.—Store rooms, from \$2.50 to \$10. Special fixtures extra.

Chicago, Ill.—Stores are assessed in addition to frontage rates, 25 cents per annum for each person employed therein, exceeding ten; also, additional charge for special fixtures.

Omaha, Neb.—Stores are assessed from \$5 to \$15 each per annum. Special fixtures extra.

Syracuse, N. Y.—Stores \$10 per annum. All fixtures outside of one faucet are charged extra.

Buffalo, N. Y.—Stores in addition to specific rates, \$1.50 per annum and upwards.

Toledo, O.—According to number of feet front, business engaged in, number of persons employed, etc. Special fixtures extra.

Brooklyn, N. Y.—According to frontage. Extra for certain business and fixtures.

Louisville, Ky.—A minimum and maximum rate is fixed, dependent entirely upon the business engaged in. Separate charges for fixtures.

St. Louis, Mo.—According to business engaged in. Special fixtures extra.

Albany, N. Y.—Stores are assessed at two-thirds of frontage rates. See dwelling house charges.

Philadelphia, Pa.—Stores are assessed according to business. Special features are charged extra.

Baltimore, Md.—Stores are assessed according to feet front, running from \$6 to \$10 per annum. Nothing extra for fixtures.

Pittsburg, Pa.—All charges according to fixtures in use.

Boston, Mass.—The rate for stores, etc., is determined by the number of persons employed or doing business, the charge for ten or less being \$5 per annum. Special fixtures are charged extra.

New York—Frontage rates in force here.

New Orleans, La.—From \$3 to \$20 per annum.

Providence, R. I.—Charges for stores are the same as dwelling house fixture charges.

Indianapolis, Ind.—According to number of feet, front, running from \$5 to \$15 per annum.

Rochester, N. Y.—From \$5 to \$30, according to business.

Minneapolis, Minn.—Stores for sale of any goods, except liquors and dry goods, \$1. Special fixtures extra.

St. Paul, Minn.—Stores are assessed according to width. Extra charges for special fixtures.

Kansas City, Mo.—Stores from \$4.25 to \$17 per annum. Special fixtures extra.

From this table it will be seen that for building purposes Detroit has the lowest rate and New Orleans the highest.

These tables in my judgment, give a general idea of what the water rates are in the various cities. Taken as an entirety, it is evident that Detroit has the lowest rate and New Orleans the highest.

Before passing from this feature of the paper I desire to call your attention to a clause in the Brooklyn scale of water

RATES FOR BUILDING PURPOSES.

| NAME OF CITY. | Brick per 1,000..... | Plastering per 100 sq. yds..... | Stone per Perch..... |
|-------------------------|----------------------|---------------------------------|----------------------|
| Cincinnati, O..... | \$0 10 | \$0 20 | \$0 4 |
| Milwaukee, Wis..... | 6 | 30 | 2½ |
| *Nashville, Tenn..... | 10 | 30 | 5 |
| Cleveland, O..... | 10 | 35 | 2½ |
| **Newark, N. J..... | 10 | 25 | 2½ |
| Jersey City, N. J..... | 10 | 25 | 2½ |
| St. Paul, Minn..... | 2 | 5 | 0½ |
| Chicago, Ill..... | 15 | 15 | 1 |
| Omaha, Neb..... | 15 | 15 | 1 |
| Toledo, O..... | 4 | 15 | 5 |
| Syracuse, N. Y..... | 6 | 20 | 2 |
| Louisville, Ky..... | 10 | 50 | 4 |
| Rochester, N. Y..... | 10 | 50 | 4 |
| Albany, N. Y..... | 6 | 20 | 1 1-3 |
| !Buffalo, N. Y..... | 5 | 20 | 1 1-3 |
| Brooklyn, N. Y..... | 5 | 20 | 1 1-3 |
| St. Louis, Mo..... | 10 | 50 | 5 |
| Pittsburg, Pa..... | 10 | 50 | 5 |
| !Indianapolis, Ind..... | 10 | 35 | 3 |
| Boston, Mass..... | 6½ | 10½ | 2¾ |
| New York, N. Y..... | 10 | 40 | ..... |
| New Orleans, La..... | 25 | 1 00 | ..... |
| Minneapolis, Minn..... | 5 | 20 | 1½ |
| St. Paul, Minn..... | 5 | 20 | 1½ |
| Kansas City, Mo..... | 8½ | 33 1-3 | 2½ |

*No fixed charges here. Stone masons and brick masons are charged from \$20 to \$60 per year.

**Per cubic yard.

!Per cord.

!!Per yard.

rents charged against "vacant lots," which is as follows:

"Vacant lots \$100 and under, 1 cent per running foot frontage.

"Assessed at over \$100 and not over \$200, 2 cents.

"Assessed at over \$200 and not over \$500, 5 cents.

"Assessed at over \$500 and not over \$1,000, 10 cents.

"Assessed at over \$1,000 and not over \$2,000, 15 cents.

"Assessed at \$2,000 and over —, 20 cents."

I do not find a charge of this kind in any of the other cities, excepting Albany, N. Y., where a charge is made of 10 cents per annum per front foot. As to the advisability of assessing vacant property, I have nothing to say. However, a clause of this kind, strictly enforced, would no doubt realize a neat sum in almost any city, probably sufficient to justify a reduction in the rates as now existing.

It is important that the members of the society examine the figures shown in the tables presented, in so far as they pertain to their respective cities, so that if any of the figures are wrong the same may be corrected before sending the copy to the printer.

I come now to the other feature of this paper. As I have already stated, in addition to securing the rates charged in these cities, it was deemed advisable to also secure data that may have a bearing on the subject of fixing rates. A series of questions were prepared and submitted to the officers of the various cities as follows:

Question 1. Do you have a gravity supply, or are you required to pump all your water?

Question 2. In furnishing water to your citizens, do you pump directly into the supply pipes, or do you pump into reservoirs, standpipes, tanks or towers?

Question 3. What is the pressure of water in your pump mains, and what is your suction lift?

Question 4. If you have a high service, what is the pressure in your pump main, and what is your suction lift, and what is the proportion of the water pumped by the high service to the total supply?

Question 5. What is your source of supply?

Question 6. Do you purify your water supply? If so, what is the cost of purification as compared with the entire cost?

TABLE NO. 3.

TWELVE-ROOM DWELLING-HOUSE.

When blank spaces appear there are no extra charges for those fixtures, the same being included in the first charge for the house.

| NAME OF CITY. | 2-Room House as described ... | 1 Yard Hydrant. | 1 Kitchen Sink.. | Three Stationary Wash Stands.. | 2 Baths, Hot and Cold Water ... | 3 Self-Closing Water Closets. | 1 3-Tray Laundry Tub | Sprinkling 150 sq. yds. Lawn | Total |
|----------------------------|-------------------------------|-----------------|------------------|--------------------------------|---------------------------------|-------------------------------|----------------------------|------------------------------------|-------------|
| Baltimore, Md. (1).... | \$13 00 | ..... | ..... | \$6 00 | \$1 60 | \$2 80 | ..... | 80 | \$13 00 |
| Detroit, Mich | 2 00 | ..... | ..... | ..... | 4 00 | 6 00 | ..... | ..... | 13 20 |
| Cleveland, O..... | 7 50 | ..... | ..... | ..... | 3 00 | 4 00 | ..... | 4 00 | 17 50 |
| Rochester, N. Y. (2).... | ..... | ..... | ..... | ..... | 3 50 | 6 00 | ..... | 3 00 | 18 10 |
| St. Paul, Minn..... | 5 60 | ..... | ..... | ..... | 2 00 | 3 50 | ..... | 4 25 | 19 25 |
| Buffalo, N. Y. (3).... | 8 00 | ..... | ..... | ..... | 4 00 | 7 50 | ..... | 3 00 | 19 60 |
| Minneapolis, Minn | 3 60 | ..... | ..... | 1 50 | 4 00 | 7 00 | ..... | 6 00 | 22 00 |
| Syracuse, N. Y..... | 5 00 | ..... | ..... | ..... | 3 99 | 4 66 | 3 33 | 4 35 | 23 61 |
| New York City (4).... | 16 00 | ..... | ..... | ..... | 3 00 | 4 00 | ..... | 5 00 | 24 00 |
| Columbus, O..... | 7 28 | ..... | ..... | ..... | 5 00 | 7 00 | 3 00 | 2 00 | 25 00 |
| Newark, N. J. (5).... | 6 25 | ..... | ..... | ..... | 5 40 | 4 50 | 1 50 | 3 00 | 25 60 |
| Toledo, O..... | 5 00 | ..... | ..... | 3 00 | 6 00 | 3 00 | 5 00 | 5 00 | 26 00 |
| Cincinnati, O..... | 8 50 | ..... | ..... | 2 70 | 5 40 | 4 50 | 1 50 | 3 00 | 25 60 |
| Philadelphia, Pa..... | 5 00 | ..... | ..... | 2 00 | 6 00 | 3 00 | 5 00 | 5 00 | 26 00 |
| Louisville, Ky..... | 9 50 | ..... | ..... | 1 50 | 5 00 | 9 00 | 1 50 | 1 00 | 27 50 |
| Brooklyn, N. Y. (7).... | 19 00 | ..... | ..... | ..... | 3 00 | 4 00 | ..... | 2 50 | 28 50 |
| Chicago, Ill. (6)..... | 16 50 | ..... | ..... | 2 00 | 3 00 | 6 00 | ..... | 3 00 | 30 50 |
| Pittsburg, Pa..... | 13 00 | \$1 00 | ..... | 2 00 | 2 00 | 9 00 | ..... | 5 00 | 32 00 |
| Boston, Mass. (8)..... | ..... | ..... | ..... | ..... | ..... | 15 00 | ..... | 5 00 | 32 00 |
| Indianapolis, Ind..... | 12 00 | ..... | ..... | ..... | 6 00 | 9 00 | 7 00 | ..... | 34 00 |
| Albany, N. Y. (9)..... | 22 50 | ..... | ..... | ..... | 3 00 | 4 00 | ..... | 5 00 | 34 50 |
| Milwaukee, Wis. (10)... | 12 00 | ..... | ..... | 3 00 | 6 00 | 6 00 | 3 00 | 5 00 | 35 00 |
| Omaha, Neb..... | 11 25 | ..... | ..... | 3 00 | 5 50 | 7 50 | 3 00 | 5 00 | 35 25 |
| Allegheny, Pa. (11).... | 19 25 | ..... | ..... | 4 50 | 6 00 | 4 00 | ..... | 2 50 | 36 25 |
| Providence, R. I..... | 6 00 | ..... | ..... | 4 00 | 8 00 | 11 00 | 3 00 | 5 00 | 37 00 |
| Kansas City, Mo..... | 9 25 | ..... | ..... | ..... | 8 50 | 12 00 | ..... | 8 00 | 37 75 |
| Jersey City, N. J. (12)... | 22 50 | ..... | ..... | ..... | 8 00 | 9 00 | ..... | ..... | 39 50 |
| St. Louis, Mo..... | 9 00 | ..... | ..... | ..... | 10 00 | 15 00 | ..... | 7 50 | 41 50 |
| Nashville, Tenn. (13)... | 6 00 | ..... | ..... | ..... | 16 00 | 18 00 | ..... | 4 50 | 44 50 |
| New Orleans, La..... | 15 00 | 4 00 | ..... | 6 50 | 8 25 | 14 00 | 4 50 | ..... | 52 25 |

(1) Baltimore, Md.—Approximated on frontage rate, three-story building, 50 feet front.

(2) Rochester, N. Y.—According to value of building, estimated value of building \$7,000, assessed at \$650.

(3) Buffalo, N. Y.—Approximated on frontage rate, three-story building, 50 feet front.

(4) New York (Manhattan)—Approximated on frontage rate, three-story building, 50 feet front.

(6) Chicago, Ill.—Approximated on frontage rate, three-story building, 50 feet front.

(7) Brooklyn, N. Y.—Approximated on frontage rate, three-story building, 50 feet front.

(9) Albany, N. Y.—Approximated on frontage rate, three-story building, 50 feet front.

(12) Jersey City, N. J.—Approximated on frontage rate, three-story building, 50 feet front.

(2) Rochester, N. Y.—Dwelling houses assessed according to valuation, \$865.36, \$28.84½ average of house, a house whose assessed valuation is \$15,000 or less is assessed at \$4.00. It is then graduated up to \$7.50, according to valuation.

(5) Newark, N. J.—In addition to dwelling house, charge and special charges as shown, there is also a charge of \$1.25 for kitchen boiler.

(8) Boston, Mass.—According to value of building; estimated value of building \$7,000, assessed \$12.00. Valued at \$1,000 is assessed at \$6.00 per annum. This rate is increased for each \$1,000 or part thereof \$1.00 per year.

(10) Milwaukee, Wis.—The rates charged in Milwaukee under surveys entitle the consumer to a fixed amount of water only.

(11) Allegheny, Pa.—Closet and sprinkling rates are figured at minimum prices.

(13) Nashville, Tenn.—This rate is for three persons or less, each additional person \$2.00.

Question 7. Are main pipe extensions paid for out of revenue of water department, or by assessment against abutting property?

Question 8. Is interest and sinking fund on existing bonded debt provided out of water rents or by general taxation?

Question 9. What discount, if any, is allowed for prompt payment of water bills?

Question 10. Is the department self-sustaining at present? Is any money raised by taxation to maintain it?

Question 11. Are the water works owned by the city or private individuals?

The answers received to these questions have been tabulated and are presented with this report. Only a careful examination of all of the details will demonstrate what value the same may have in determining by comparison the water rates in the various cities. I shall not attempt to discuss this feature of the paper in detail, but simply give a summary of the data collected in order that the members may more fully understand the importance thereof.

Of the thirty cities enumerated twenty-one are required to pump all of their water; four receive the same by gravity, viz.: Newark, Jersey City, New York and Syracuse, while five cities receive part by gravity and are required to pump part of it. Two of the cities do not do any pumping at all, the gravity supply being sufficient for distribution; ten pump into reservoirs; seven into supply pipes direct, and eleven partly direct and part-

ly to reservoirs, standpipes, etc. The importance of carefully analyzing this question in making comparisons of water rates should not be underestimated.

The fourth question relates to high services, the pressure in pump mains and suction lift, and the proportion of the water pumped by the high service to the total supply. As with the third question, it is better to study this answer, with respect to the pressure and suction lift, than to try to discuss it. Of the thirty cities, seventeen have a high service, while thirteen are not required to repump any part of their water. The percentage of water repumped to the total supply runs from 1.9 in Philadelphia to 23 1-4 per cent. in Cincinnati.

Nineteen of the cities make no attempt at purification, some of them contending that it is not necessary, and six are now taking steps toward purification. Five of them purify their water.

Twenty of the cities pay for the extension of their water mains out of the revenues of the water department; three by assessment against abutting property, and eight by assessing part and paying part out of revenues, or by general taxation.

Nineteen cities provide for both their interest and sinking fund charges out of the revenues of the department; four

provide for the same, partly out of the revenues and partly by taxation, while five provide for the same by general taxation.

It is evident that if a water department was not required to pay for main pipe extensions and interest and sinking fund out of its revenues, a material reduction could be made in water rents. As has already been stated, the tables show that Detroit has the lowest rate. In that city, however, the interest charges of the department, amounting to \$75,000 per annum, are provided for by general taxation. If the department was required to raise that much more money each year, it would necessarily follow that there would be an increase in the water rents.

Another important feature is the discount allowed on water bills. Nine cities allow a discount for prompt payment, the same running as high as 20 per cent. in the city of Louisville, which, if taken into consideration, very materially affects their rate, as shown by the tables. Twenty-one of the cities allow no discount, and of this number, six exact a penalty if bills are not paid promptly.

All of the answers received as to whether or not the departments are self-sustaining, are answered in the affirmative.

Of the thirty cities the water works of only three of them are owned by private companies, viz.: Those of Indianapolis, New Orleans and Omaha. The Louisville department is managed by a private company, but nearly all of the stock is owned by the city sinking fund.

Proposed Improvements to Philadelphia Water Supply.

The city of Philadelphia has been struggling since 1856 with the subject of securing a pure and ample supply of potable water. Commissioners and engineers have prepared reports and recommendations without number, all of which have been duly received and filed.

The present mayor, Samuel H. Ashbridge, realizing the importance of the matter to the lives and health of the citizens of Philadelphia, appointed an engineer commission, comprised of Rudolph Hering, Joseph M. Wilson and Samuel M. Gray, to make investigations and report on improvements to the water supply. These gentlemen have prepared a report in an exceptionally short time, and it remains to be seen whether their report will meet the same fate as its predecessors. The people of Philadelphia are to vote in November for borrowing \$12,000,000 to carry out the recommendations suggested in the report.

The report points out that the deplorable condition of the city's water supply is due to the pollution of its sources, principally the Schuylkill and its tributaries, to the lack of effective pumping machinery, and to the insufficient capacity of the distributing system. The report says:

"The Schuylkill water is being polluted at many points from its source down to the city line. Beginning with the mine waters, the coal dust and some sewage from the upper parts of the water-shed, the pollution is increased below by the sewage of the cities and villages situated along the river and its chief tributaries, by the manufacturing refuse, and by the surface water from agricultural districts, all of which render the water sometimes turbid, unpalatable, impure and dangerous to health.

"It, therefore, becomes imperative, either to select a new source of supply or to improve the present one, so that it will become thoroughly satisfactory to the

citizens both as to quality and quantity. The first project requires the bringing of Blue Mountain water to the city; the second requires a thorough filtration of the Schuylkill and Delaware waters taken within the city limits. A decision as to which of these alternative projects is the better one must be based on the quality and quantity of water to be supplied and on the cost.

"The present population, to be supplied from the city's pipe system as soon as practicable, is taken at 1,300,000 persons. The population to be held in view in the design for new works is assumed at 3,000,000 persons.

"We consider that at present a daily supply of 200,000,000 gallons, being 150 gallons per capita, is a very liberal allowance. We recommend that this quantity of pure water be immediately provided for. At the same rate a population of 3,000,000 persons will require a daily supply of 450,000,000 gallons.

"The most economical project for a supply of mountain water is that taken from the upper Perkiomen and from the Lehigh water-sheds. For immediate needs its cost of construction is \$33,410,000. Its annual cost for operation, interest on investment and all expenses, to deliver the water into the city reservoirs, is \$1,205,000.

"For a daily supply of 450,000,000 gallons, the total first cost would be \$66,740,000, and the annual cost \$2,480,000.

"The most economical project for a supply of filtered water is that by which the water of the Schuylkill and Delaware rivers are filtered within the city limits. Its cost of construction, for present requirements, would be \$10,974,000. Its annual cost, for operation, interest and all expenses, to deliver the water in to the city reservoirs, is \$1,227,000.

"For a daily supply of 450,000,000 gallons, the total cost of the filter plant, including special mains from Torresdale to the centre of the city, would be \$34,155,000, and the annual cost \$2,972,000.

"The estimate of cost has shown three important results:

"1. The original cost of any of the mountain water supplies is very great for the large quantities of water which the city requires.

"2. A filtered water supply can be obtained at a first cost which is within the present borrowing capacity of the city, and the plant can be operated at a cost which will not exceed the probable annual net earnings of the water works.

"3. The total annual cost of delivering the water into the city reservoirs, by either method, is about the same, and the annual earnings will cover the operation and extension."

The commissioners recommend the adoption of the project by which the waters of the Schuylkill and Delaware rivers taken within the city limits are purified.

Pure Water Demanded.

At the recent convention of the League of Iowa Municipalities, the following report of the water works committee, prepared by Alderman C. D. Huston, of Cedar Rapids, was read by Mayor Bennett, of Fort Dodge:

Your committee on water works and water supply propose to occupy only a small portion of your time, and that principally in relation to some facts connected with water supply and purification, the influence on the public health of water of high quality and the necessity of municipal ownership to secure purity at all times.

The apparently large expense of constructing water plants and a heretofore lack of knowledge and experience on the part of many of the companies constructing them led promoters to consider their

obligation fulfilled upon securing a sufficient supply of water, often regardless of the quality of such supply, thus losing sight of the fundamental laws of health, viz: pure air, pure water and a clean soil, all very essential to the end now most desired by all users, of securing only pure and wholesome water for all purposes. Experts have well proven that typhoid, diphtheria and pythiasis, as well as all forms of zymotic and enteric diseases, can be and are traced to an utter disregard of all health laws or to inferior sanitary arrangements.

This is an age of baths, so different from the days of the eminent European physician, Dr. Playfair, who, in discussing the habits of the peoples of the old countries in its dark ages, said: "For a thousand years not a man, woman or child in Europe ever took a bath." All people are fast learning new ways and adapting themselves to new conditions, and seldom is a home now built in a city where its sanitary arrangements are not looked upon as one of the most essential of all conveniences in the home, and the city is not alone in this respect, as the same conditions exist in the villages, and often upon the farm. It is becoming well known to an enlightened people that without adequate sanitary arrangements there can be no good health. Complete and perfect sanitation will do more to remove zymotic and enteric diseases than the skill of all the physicians in the world—in fact, it has been said that if all the communities of the world would perfect their sanitary works our bodily afflictions would be limited to those due to our personal habits alone. Pure water is, therefore, not only a necessity for drinking and dietetic purposes but for all public and private uses. A contaminated supply should never be used for any purpose whatever, as it is only a question of the number of people who become exposed to the dangers of its use and not the lessening of the dangers lurking in the contaminated water itself.

In providing a source of supply, there are several matters to be taken into consideration. It is necessary to secure such a quantity as will be sufficient during periods of extreme drouth, such as we have had in Iowa during the past ten years. Another is the potability or quality and the probability of the water remaining unpolluted. Too little attention has been given the second problem, and many cities throughout the United States, and even our own state, have paid the penalty of their neglect in being scourged with typhoid fever and other dread diseases. The securing of a water supply at the present time should be done with thoughtful consideration as to the future as to the probability of the water becoming contaminated throughout the state by the rapid building up of cities and towns along the streams, and systems of sewerage being turned therein from the headwaters to the mouth. While great improvements have been made in reservoirs, stand pipes, pumping apparatus, mains, etc., yet the most necessary of all—the purification of the supply—has been relegated to the rear, until the people themselves have risen en masse and demanded purity. They realize the dangers that are upon us and fully appreciate the necessity of supplying only such water as will stand all tests. There is no question that God, in His infinite wisdom, has supplied sufficient pure water for the use of man and beast throughout the world, and it is only left to man to devise means for its distribution.

Of course, there have been some efforts made to purify polluted waters, principally by mechanical filtration, and some improvement in this direction has been made, but it is an undisputed fact that it would be far better to secure a supply pure, even at a greater expense, than to rely upon the ingenuity of man to purify the same, especially so as the plants are sometimes managed by inexperienced, and often with thoughtless and careless employees in direct charge. Municipal ownership is not a fad, nor simply a popular subject for a campaign. It is a necessity, a conclusion reached after careful study by the best minds of the country. It will soon be an established principle in all the cities of the country instead of only a per cent. The idea of municipal ownership is not a partisan question in any sense, nor can it be made a partisan issue.

The greed of private corporations has influenced the management to furnish water at the cheapest possible cost regardless of its quality, and while companies have been forced by public sentiment to make efforts toward purification, yet they have studiously avoided doing so on nearly every occasion. While some have put in mechanical filters, yet they are ever ready to abandon their use on the slightest pretext in order to save the expense of extra pumping, the use of coagulants and other necessary expenditures. When the water is clear their excuse is that filtration is not needed, and yet it may contain large numbers of bacteria. When the water is filthy their

plea often is that the use of coagulants interferes with their steam boiler, laundry and other business. There is a never ending effort to avoid any expense in operation, even to the extent of endangering the lives of the users in the community. Thus it is that the improvements necessary to secure water of high quality and efficient service, together with the minimum rates consistent with the proper operation and maintenance of a water works system can be best secured by the people themselves rather than by companies which build and operate water works systems solely for private profit, and municipal ownership of water plants has forged itself to the front, proven itself worthy of consideration and support, and will eventually and quickly become an established fact throughout the entire country. The sentiment of a large majority of the people of all communities will support municipal control of water plants because they well know public sentiment will not for one moment excuse any administration from furnishing anything but pure and wholesome water.

Your committee does not advocate municipal ownership simply because of the financial advantages which will accrue to the community and the city from such operation, but for the higher and better reason of insuring purity of water and sufficient hydrant pressure for the protection of life and property. One of the most unfortunate experiences through which a city administration has to pass is that of defining sewerage districts in a city and compelling the citizens to connect with the sewers, thereby forcing the owners to take water from private companies, often obnoxious and arbitrary, who regard the earth and fullness thereof as theirs by right of force if it cannot be secured by other means.

Investigations made at Cedar Rapids and other Iowa cities during the year furnish food for thoughtful minds on the water question, and what is true of these cities is true of many others throughout the country, and after all has been done and said, the question will never be fully and satisfactorily settled until the cities take over and operate the plants. This policy is the undoubted trend of the time and of public sentiment everywhere.

Municipal Ownership and Reduction of Waste.

The report of the committee on water works and water supply presented to the convention of the American Society of Municipal Improvements by Mr. Morris R. Sherrerd, engineer and superintendent of the department of water, Newark, N. J., is a strong plea for municipal ownership and the reduction of water waste.

The report states that many cities are so situated that the procuring of an adequate supply of pure water for their growing needs is becoming a very serious question, advantage of which is being taken by wise financiers or by scheming corporations to forestall the often tardy action of the municipalities. Cities should be urged to conserve well their present supply by the reduction of waste, and also to look into the future and provide for that which may be needed, but which, if time is lost, may become unavailable except at large cost to the city and rich harvest to the schemers who have already forecasted this public necessity.

The report gives the recent experience of Mr. Sherrerd in his endeavor to reduce the water waste in Newark. In 1898, with 10 per cent. of the services metered, the metered takers used 12 per cent. of the supply and paid approximately 28 per cent. of the revenue. The city, for public service, fires and drinking troughs, used approximately 5 per cent. of the total quantity, the water department receiving an equivalent of 4 per cent. of its revenue by taxation, while the quantity chargeable to unmetered consumers and waste amounted to 83 per cent. of the water delivered to the reservoirs and paid only 68 per cent. of the revenue.

During May of this year the compulsory introduction of meters was undertaken by the city at its own expense for the meters and the labor of setting them.

A careful house to house inspection was made and notices given to repair leaky valves. Horse drinking fountains were provided with float valves. Meters were set to 3 per cent. of the 32,000 taps in the city, selection being made of wasteful consumers, principally saloons, tenement houses and business places.

The result has been a lowering of the consumption nearly 15 per cent. The report states that perhaps one-fifth of the above reduction can be attributed to the special inspection and the change in the watering troughs, but the greater part is due to the new meters. This saving corresponds to a reduction of the daily consumption from 110 to about 95 gallons per capita. This reduction in the consumption materially increases the pressure and fire service.

Were the same economy in water supply and consumption practiced in this country as is general in the larger cities of Europe, where Glasgow, Zurich and Munich average perhaps in the neighborhood of 50 gallons per capita per day, much of the difficulty now being faced by American cities would be overcome. More money could without doubt be advisedly applied to the introduction of meters, thereby greatly increasing the fire service generally throughout the city, which is not the case with laying a new supply main for one section.

Every city should own its own water supply and thus save the profits which a private corporation would turn over to its stockholders, but that supply should also be metered and substantial economy practiced in water consumption. These are not uncommon lessons drawn from the experience of nearly all our large cities, but they are lessons which sooner or later must be taken to heart.

A Complete Water Report.

The tenth annual report of the Syracuse water board, of which Mr. William R. Hill, M. Am. Soc. C. E., is chief engineer and superintendent, gives in detail very valuable information relating to a general description of the water plant and its earnings and expenditures. It has a comparative annual table of the receipts for water rentals, etc., each year since 1892, itemized as follows: For water used through meters, for schedule accounts, for municipal use, for building purposes, for sprinkling taxes, for filling tanks, for flushing sewers, and other miscellaneous uses. In like manner it gives a comparative annual table of the disbursements for the same period, itemized as follows: For interest on bonds, for salaries, for inspecting services and reading meters, for watchmen, for gate house keeper, for livery and trucking, for stationery and printing, for rent, for heat and light, for taxes, for insurance, for construction, for repairs, for tools, and other miscellaneous expenses. It has a statement giving the date of issue and amount of the bonds, together with the rate of interest thereon.

The report gives very interesting information relating to the decreased rate of mortality since the introduction of Skaneateles Lake water. It has a statement of the bacteriological analysis of the water for each month since January, 1896; also a chemical analysis.

It has a statement of the quantity of water drawn from Skaneateles Lake, the source of supply, each month for the last three years, followed by a statement of the number of meter and schedule services in use for a like period. It contains very interesting information as to

the quantity of water used for domestic purposes, for manufacturing purposes, and for power to operate elevators, giving in detail the quantity used for each of the above purposes for each month for the last year.

The report also has a list of the general repairs, renewals, etc., to mains, valves, hydrants, service pipes, and service valve boxes for the last five years.

It has a complete description of the water works, describing the source and mode of supply, and giving a description of the conduit line and distributing reservoirs, and a statement of the diameters and lengths of mains in the distributing system. It gives a summary of the hydrants in use, giving the name of the manufacturer, together with a description of a fixture used for filling sprinkling carts. It gives the name of the manufacturer, size and number of all valves in use in the distributing system, also the number of watering troughs in service. It has a summary of meters in use, giving their name, number and size. It has a statement of the number of services in use at the end of each year for the past eight years.

It has a statement of the length of distributing mains, number of hydrants in use, and the population for each year since 1852; also a statement of the length of streets opened and in use and the length of water mains in each ward of the city.

It has a statement of the elevation of the surface of the water in Skaneateles Lake for each month since 1878, a list of the real estate controlled by the water department, a summary of the rain fall for each month for the past five years, followed by the rates charged for water for meter and schedule accounts. In fact there is scarcely a question that can be asked relative to the Syracuse water department which cannot be answered by the report.

Denver to Vote on Water Works.

Denver, Col., will most likely have a water works system of its own in the near future. For years Denver has been fighting the private water company in the courts for a satisfactory adjustment of rates, but the people have been given no relief from that source. The last decision of the court was in favor of the company and the rates over which there had been so much public complaint were upheld.

The charter of the city of Denver provides that the city may contract an indebtedness for such amount as may be necessary, and may be recommended by the board of public works, and may issue bonds therefor, for the construction, erection or purchase of water works and the necessary plants, machinery, pipes, conduits and appurtenances, and the construction and purchase of reservoir sites, canals and ditches, necessary to provide the city with an adequate water supply; also that no such indebtedness shall be created for bonds issued unless the question of incurring the same and issuing bonds therefor shall be submitted to the vote of such qualified electors of the city of Denver as shall in the next year preceding have paid a property tax therein, and a majority of such voting upon the question by ballot shall vote in favor of creating such debt and issuing such bonds.

On October 10 the board of public works adopted a resolution recommending to the city council that it contract an indebtedness of \$4,700,000 for the construction of a gravity water works sys-

tem and the purchase of all or a part of the present private plant. The council immediately adopted an ordinance, accepting the recommendation of the board of public works, and ordering a taxpayers' vote on the question of issuing \$4,700,000 of bonds for November 7. At this writing the election has not taken place, but Mayor Johnson writes to "City Government" that the majority of the taxpayers will undoubtedly vote in favor of the bond issue.

Later—At the election on November 7 the proposition to issue the bonds was carried by over 2,000 majority.

Charleston's New Water Works.

Arrangements for the construction of a new municipal water works at Charleston, S. C., are being carried on rapidly by the water works committee of the city council. The specifications for the new system, as prepared by J. L. Ludlow, have been printed in book form, and the book is now being sent to all who contemplate bidding on the work.

The project contemplated in Engineer Ludlow's report is to take water from the Edisto river near Givham's ferry, at the rate of 8,500,000 gallons per day, and convey it through a conduit 30 inches in internal diameter, to distributing reservoirs near the city, with a stand pipe to limit pressure on the line of the conduit, on the Summerville ridge, 48,000 feet distant from the pumping station at the river.

The stand pipe will be located on Summerville ridge, and it shall be built with an inside diameter of 25 feet, with a height of 80 feet, and with a strength of 48,000 pounds per square inch.

The reservoir is to be located on a site near the city, about a mile and a half north of the city limits, and will have a capacity of 25,000,000 gallons. At the reservoir there will be a pumping station, which will consist of two separate buildings, one of which will contain the filtration plant; the other pumping engines, boilers and accessories.

Big Street Water Pipe Tested.

A new 42-inch steel water main was recently tested at Seattle, Wash., with satisfactory results. It was on that portion of the new Cedar river system known as the Easterly Renton valley section, which is 4,600 feet long, reaching from the east bank of Black river to the top of the hill beyond Renton. The pipe is made of steel plates 7-16 of an inch in thickness, and is 42 inches in diameter. To the ordinary observer it is best described as resembling a mammoth steam boiler three-quarters of a mile in length, stretched out in a wide ditch.

The force of the waterhead between Cedar river and the city is so great that the pressure on this section of the line when in service will be between 150 and 200 pounds to the square inch. At the recent test the pipe stood a pressure of 175 pounds to the square inch.

A Ten-Year Lighting Contract.

Lorain, Ohio, has made a contract for electric street lighting to run ten years from November 1, 1899. Until February 1, 1901, the rate per arc light, on moonlight schedule, is to be \$77.95 per year. After February 1, 1901, the lights are to burn on all night schedule and the rates are fixed as follows: One hundred lights or more, at \$87 each per annum; 125

lights or more, \$85 each per annum; 150 lights or more, \$83.50 each per annum; 200 lights or more, \$81 each per annum.

RECENTLY ELECTED MAYORS.

Detroit, Mich.—William C. Maybury, Dem., re-elected.
Indianapolis, Ind.—Thomas Taggart, Dem., re-elected.
Providence, R. I.—William C. Baker, Dem., re-elected.
Rochester, N. Y.—George A. Carnahan, Rep.
Albany, N. Y.—James H. Blessing, Rep.
Syracuse, N. Y.—James K. McGuire, Dem., re-elected.
New Orleans, La.—Paul Capdeville, Dem.
Newport, R. I.—P. J. Boyle, Dem., re-elected.
Amsterdam, N. Y.—Samuel Wallin, Rep.
Troy, N. Y.—D. E. Conway, Rep.
Utica, N. Y.—R. W. Sherman, Dem.
Binghamton, N. Y.—Jerome DeWitt, Dem., re-elected.
Newburg, N. Y.—Jonathan D. Wilson, Rep.
Kingston, N. Y.—James E. rhinney, Rep.
Oswego, N. Y.—Albert M. Hall, Dem.
Yonkers, N. Y.—Leslie Sutherland, Rep., re-elected.
San Francisco, Cal.—James D. Phelan, Dem., re-elected.
Sacramento, Cal.—George Clark, Rep.
Cohoes, N. Y.—James H. Mitchell, Rep., re-elected.
Gloversville, N. Y.—Parkhurst, Rep.
Johnstown, N. Y.—Heagle, Rep.
Ansonia, Conn.—Lockwood Hotchkiss, Jr., Dem.
Geneva, N. Y.—A. H. Herendeen, Rep., re-elected.
Schenectady, N. Y.—J. H. White, Dem.

To Readjust Street Railway Situation.

The initial step to readjust the street railway situation in Columbus, Ohio, has been taken in the city council, where Mr. Miles has introduced a resolution declaring the franchise of the Columbus Street Railway Company, on East Main street from High street to the eastern city limits, expired and null and void. The purpose of the resolution, it is understood, is to force the company to apply for a new franchise for this line. Then, when the franchise is granted, it will provide the right for the suburban railway companies to run their cars to the centre of the city over the line. At present the suburban roads have no access to the centre of the city, and passengers are required to pay one fare to the terminus of the city railway and another to the suburban road.

Mason To Go Abroad.

Mr. Frank C. Mason, superintendent of the Brooklyn police telegraph system, will leave in May next for the Paris Exposition, where he will act as the official representative of the National Association of Municipal Electricians. It will be his special duty to investigate all new electrical apparatus shown at the Exposition and report on the same to the association. While abroad Mr. Mason will visit the principal European cities with a view to examining the systems of fire and police telegraph in vogue there. He will also endeavor to interest the municipal electricians of Europe in the work of the National Association of Municipal

Electricians, and as a result of his work the organization may become international in its scope. While traveling in foreign countries Mr. Mason will be pleased, of course, to recommend American made electrical apparatus, which is undoubtedly the best in the world.

NEW BOOKS.

Sewer Design, by H. N. Ogden, C. E. (Published by John Wiley & Sons, New York. Price \$2.)—A well arranged treatise on sewer design, containing, perhaps, in complete form, a better "collection and unification of scattered material" relating to the subject than has been published during the last few years. The author seems to have been particularly fortunate in bringing together the views and experience of many sanitary engineers and writers whose opinions are worth while. Sewer Design should find a place in every engineer's library.

Sanitary Engineering of Building, Vol. I., by William Paul Gerhard. (Published by William T. Comstock, New York. Price \$6.)—This valuable book deserves a more protracted notice than we are able to give it at this time. Literature upon this important subject is scarce, especially from a pen of such authority as Mr. Gerhard. He treats exhaustively upon the question of defective plumbing and sewer gas, and deals in a practical and scientific way with the methods of avoiding these by means of proper drainage and sewerage with their necessary traps, systems of trapping and proper plumbing fixtures, discussing both old and new methods of accomplishing these results. The author makes a strong plea for the sanitation of tenement houses, factories and workshops. This book should find its way into the library of every one interested in the study of economical municipal problems, as well as sanitary engineers, to whom it is of special value.

The Purification of Sewage, by Sidney Barwise, M. D. (Published by D. Van Nostrand Company, New York. Price, \$2.)—The rapid advance made in the development of the subject makes a book a few years old out of date. This little book brings the entire subject of sewage disposal up to date and includes a chapter on the Septic tank. The book is of value because it records the experiences of a medical officer of health whose duties gave him constant opportunities for the inspection of sewage works in actual operation and for analyzing the effluent from such works. This little treatise deals almost exclusively with the chemical and biological sides of the question.

—The Okonite Company, of New York, manufacturers of insulated wires and cables, have taken a novel method to keep their firm in the minds of would be customers, by giving away a handsome stylographic pen with the name of the company on the holder.

—The council at New Albany, Ind., has passed an ordinance granting to T. Lindsay Fitch, of Louisville, Ky., the right to build and operate a new water plant. The franchise, which is for twenty-five years, provides for the furnishing of fire hydrants to the city at \$50 each per year, the price paid the present company being \$100, and makes a reduction of about 35 per cent. in the rates for private consumers.

FIRE DEPARTMENTS.

Date for Charleston Convention.

The executive committee of the International Association of Fire Engineers have decided upon the second week in October as the time for holding next year's convention of the organization. As the meeting is to be held at Charleston, S. C., the action of the committee in setting the date in the fall of the year will be generally approved by the members. The League of American Municipalities also meets at Charleston next year, but its meeting will probably not occur until after the November election.

A Model Fire House.

[Paper read before the convention of the Firemen's Association of Pennsylvania by ex-President John E. Spears of Reading.]

A description of a model fire house is a topic that could be discussed from several standpoints, in accordance to the class of city or town where located. What would be considered a model fire house in a large city might not be a model for the small city or town. The model fire house for a large city department should be favorably located for convenience, light and sanitary conditions of the highest order. The first requirement should be plenty of room.

The first floor should have ample room for the apparatus and horses, with the necessary closets, lockers, etc., for the men. The stalls for the horses should be arranged so as to enable them to be hitched in the shortest possible time. On this floor there should be ample room for the tools and the usual appliances required about a well regulated engine house. The engine room should be supplied with hose racks conveniently arranged for drying the hose, and to enable the men to change hose in the shortest possible time. The stable part should have plenty of light, be well ventilated, and should have the best sanitary plumbing, as well as the entire building. The drainage should be perfect. There should be introduced the best and most convenient appliances for handling feed and all other articles necessary for the horses.

The upper floors should be arranged for the comfort and convenience of the men, with light and airy sleeping rooms, plenty of bath rooms, closets, etc., for the use of the men, as well as a first class reading room, library, billiard and card room, and a first class gymnasium, to relieve the monotony of the long hours of service the men are obliged to give. The quarters for the foreman should be commodious and conveniently arranged. The entire house should be well furnished and comfortable in detail. The whole should be built of the best material and kept perfectly neat and clean. The above I consider would be a model fire house for a city paid or city volunteer fire department.

For a small town or village fire company, where horses are not used, a model fire house should have a good location. The first floor should have an apparatus room with all the necessary hose racks, lockers, closets, etc., with a sitting room

in the rear. The second floor should contain a parlor, library, billiard room and gymnasium, and the whole should be well furnished throughout, and the same sanitary conditions and convenience that I have described for the city department should be used for this class of fire house. In some towns, where the fire companies are in a financial way largely left to shift for themselves, it might be advantageous to have a third floor, so arranged that the company could give entertainments or rent it out for entertainments, thus deriving a revenue toward the support of the organization. The principal points for a model fire house in any city, town, borough or village are good location, plenty of room, conveniences of all kinds, material; and after being occupied, good drainage, ventilation, first class heating apparatus, well built with good cleanliness and good order should prevail.

Equipment for Small Towns.

In a paper read before the recent convention of the Pennsylvania Firemen's Association, Chief Patrick McNally, of Catasauqua, discussed the question of what constitutes adequate equipment for a fire department in a small municipality. He said:

I have selected my home, the borough of Catasauqua, as a basis to illustrate my remarks. The area of our borough is about one square mile. It is closely built up, of stone, brick and frame, principally the latter, and contains a population of 5,000. The manufacturing industries are rolling mills, blast furnaces, foundries, horseshoe works, silk and planing mills and numerous minor concerns. Our fire department consists of two steamers, one Button and one Silsby; five hand hose carriages, carrying about 3,000 feet of hose, and one hook and ladder truck. Fire alarms are given by the blowing of whistles of manufacturing industries. Horses to convey the steamers are furnished by liverymen who live in the vicinity of the quarters, and we get there with our apparatus, pretty late at times, as you may suppose. What we should have, in my estimation, and what every borough equal in size to ours should have, is one good steamer of at least third-class size; two would not be amiss, this to have all modern fixtures, such as relief valve, etc., hand hose carriage, a double line of cotton or rubber hose, tower or racks to dry the same, shut off nozzles on play pipes, a hook and ladder truck, with ladders equal in size to requirements according to heights of buildings and other equipments such as several six-gallon fire extinguishers, jumping net, gum coats and boots, and last and most important, a chemical engine of good capacity. Of course, there are a great many minor equipments, such as improved smoke protectors, latest style lanterns, etc., which are necessary adjuncts. A telegraph fire alarm may also be considered part of the apparatus, and each borough should have an improved system for sounding the alarm, so that it would be possible to tell exactly the location of the fire. The foregoing enumerates in brief what I consider absolute essentials in any fire department, and its success will never be great, in my estimation, when not supplied with these fire fighting appliances.

A Live Fire Engine Agent,

R. B. Sigafos, president of the Racine Fire Engine Company, has been having some experience. The Racine company had in New Jersey what it regarded as a very much alive agent, who went from town to town canvassing for the fire extinguishing apparatus. In a little while

orders began to come in, and the company was delighted with the apparent increase in its business. As the machines were shipped, however, letters began to reach the office to the effect that they were never ordered by the municipalities to which they were sent. The agent was apprised of this, and he very promptly sent what was regarded as satisfactory explanations, and as the orders appeared to have come from proper officials, it was believed that all the matters would be properly adjusted. However, as time went on and no payments on the engines came in, Mr. Sigafos packed his grip and quietly journeyed to Jersey. He found that valuable engines shipped to Bridgeton, Gloucester, Atlantic City, Cape May and other towns had never been ordered by the municipal authorities. The agent, for whom Mr. Sigafos is now anxiously looking, had signed fictitious names to all his orders.

Chief Swenie Resigns.

Dennis J. Swenie, chief of the fire department of Chicago, will retire next month, when his fifty years of service as a fireman will expire. His resignation is already in the hands of Mayor Harrison, who will accept it reluctantly. Chief Swenie has devoted his life to the public service at the cost of personal comfort and ease; he has continued at the dangerous work of fire fighting at an age when most men should be resting on their laurels, and he has earned his laurels many times over.

Although Mr. Swenie is advanced in years, he is still hale and hearty and as active as other men of half his age. The



CHIEF D. J. SWENIE, OF CHICAGO.

business men of Chicago, whose property has been under the chief's protection for so many years, will regret to lose such an efficient and faithful public official, but their regrets will go together with their wishes for many happy years of ease and comfort to the friend who has served them so well.

Chief Swenie has always been a worker

—as the head of the department he faced the same dangers and worked as hard as he did when a fireman in the ranks. Several times he has been seriously injured in the performance of his duties, for he never knew what it was to flinch. He is to-day the battle-scarred veteran of the American fire service, and there isn't a fireman in the whole country who would deny him the full honors of the field.

Chief Hale's European Trip.

Chief George C. Hale, of Kansas City, Mo., has accepted the invitation of the directors of the Paris Exposition to exhibit the American fire service at the big show. Chief Hale will take to Paris a complete and fully equipped steam engine company and an equally qualified truck company. Aside from exhibiting at the Paris Exposition, Chief Hale expects to visit other European cities and show them how far ahead of the rest of the world the American fire service has gone. About half of the \$15,000 necessary for the expenses of the trip has already been raised, and a big entertainment will soon be given in Kansas City to swell the fund.

Buffalo Fire Department Report.

The report of the Buffalo fire commissioners for the year ended June 30, 1899, has been issued. There are now in the department 446 officers and men, and the equipment consists of twenty-six steam fire engines, two fire boats, twenty-seven hose wagons, nine hook and ladder trucks, six chemical engines and one water tower in service, and four steam fire engines, one chemical engine and one hook and ladder truck in reserve. During the year there were 931 alarms, and the total loss was \$611,785.25. Chief McConnell is to be congratulated upon the high standard of efficiency maintained by the department.

Calcium Carbide and Acetylene Gas.

Fire Chief W. E. Roberts, of Denver, Col., is having his fire wardens ascertain the location of all calcium carbide and the name and address of every user of acetylene gas in the city. The information will be compiled and printed for the use of the fire department. There is no specific ordinance in Denver dealing with the storage of carbide and the use of acetylene gas, but the chief considers that both come under the general ordinances covering the manufacture and use of explosives. The chief will ask the fire and police board, however, to make special regulations for the storage of the carbide and the use of the gas.

Captain Ryan's Promotion.

Captain Patrick L. Ryan, who has been in charge of the New York fire department's repair shops for some years, has been promoted from the rank of foreman to that of chief of battalion. He recently passed the civil service examination with a mark of 100, something that had never been done by anyone before. Captain Ryan's duties will be the same as heretofore, but he will be given the title of chief of construction, with the rank and salary of a battalion chief.

Fire Department Items.

—Chattanooga, Tenn., has advanced the salaries of firemen from \$50 to \$60 per month.

—Edward J. McDermott is the new chief of the fire department at Tonawanda, N. Y.

—The annual convention of the Illinois Firemen's Association will be held at Princeton on January 9, 10 and 11.

—The Indianapolis fire department gave a ball for the benefit of their relief fund recently and cleared about \$1,500.

—F. H. Call has been elected chief of the fire department at Bay Shore, N. Y., and E. M. Price is the new chief at Bellport, N. Y.

—Reily Hose Company, Harrisburg, Pa., is soon to have a chemical engine, city councils having finally passed the ordinance providing for its purchase.

—James S. Barr, chief of the volunteer fire department of Kenosha, Wis., has resigned, giving as his reason that the offices of the department are being used for political purposes.

—Watertown, N. Y., will have a paid fire department about January 1. The board of public safety has asked for an appropriation of \$27,000 for the purpose of organizing the same and maintaining it a year.

—Chief W. C. McAfee, of Baltimore, is no longer a bachelor. Miss Mary Lusk, one of Kentucky's fairest daughters, became his wife a couple of weeks ago. Mr. and Mrs. McAfee have the congratulations of a host of friends.

—The council of Salt Lake City has increased the salaries of all the members of the fire department. The new schedule gives the chief \$1,680 a year, the assistant chief \$1,200, captains \$1,100, lieutenants \$1,050, and firemen \$1,000 after the first year of service.

—There are 134 engine companies in the Greater New York fire department, 71 of which are in the boroughs of Manhattan and Bronx and 63 in the boroughs of Brooklyn and Queens. There are 40 hook and ladder companies, 23 of which are in Manhattan and the Bronx.

—Chief McAfee, of Baltimore, has another bright idea for the improvement of the fire service. He suggests that the wagons of the superintendent and the assistant superintendent of machinery and repairs be equipped with portable calcium lights, to assist the men in locating and repairing breaks at night.

—The South Dakota State Firemen's Association, at its recent convention, elected the following officers for the ensuing year: President, David Finnegan, of Yankton; first vice president, J. H. Pettibone, of Sioux Falls; second vice president, A. T. Grimm, Parkston; secretary, C. L. Vaughn, of Vermillion; treasurer, Charles Helgeson, of Canton.

—Fire Chief C. E. Weidman, of Lincoln, Neb., has resigned to go into other business. In his letter of resignation he said: "I desire to urge upon you the necessity of more liberal expenditures in behalf of this department, whereby the requirements and needs of the department may from time to time be extended, thereby enabling this department to be of more efficient service." Mr. Weidman made a most efficient chief, but he was handicapped in his work by the failure of the city government to provide sufficient funds for the proper conduct of the department.

—The city of Winnipeg, Manitoba, wants to employ a competent chief for its fire department. The city attorney, who recently visited Minneapolis and St. Paul in search of a suitable man, said: "Whoever gets the place will have a life appointment. We don't want anybody who has been a politician, for our city affairs are kept as distinct as possible from politics. We can't see how a man's approval of Joe Chamberlain's foreign policy is going to make

that man reel up a hose to more advantage. So any chief that puts politics into his appointment would be quickly dismissed. But a good man would fare well. Why, our city clerk has held his office for about sixteen years. Our assessor has been with us twenty years, and our tax collector was appointed, I think, in 1876."

REPORT ON ELECTRICAL EXHIBITS.

Morris W. Mead of Pittsburg, Thomas W. Flood of Boston and Frank C. Mason of Brooklyn, composing the committee on exhibits at the recent Wilmington convention of the National Association of Municipal Electricians, have submitted the following report:

To the National Association of Municipal Electricians:

Your committee has the honor of calling your attention to the unique and elaborate exhibit made by the Montauk Multiphase Cable Company of New York. This cable may be said to be revolutionary, because of its multiphase character, it being adapted for use in connection with all things electrical, as shown. Your committee, however, have only to deal with that phase which represents the protection of life and property. Therefore, your committee in speaking of this cable and its appurtenances as being a great boon for the protection of life and property throughout the world, feel that in doing so they have only seconded the voice of the people, and that this invention will prove, by its great general utility in the saving of life and property, to be one of the most useful of the nineteenth century.

We also take pleasure in making favorable mention of the excellent and up-to-date fire and police telegraph apparatus exhibited by the Gamewell Fire and Police Telegraph Company of New York, their exhibit being the largest and most complete ever attempted by them before. It was greatly enjoyed by all electricians present.

The exhibit of Frederick Pearce, 18 and 20 Rose street, New York, was greatly appreciated by all.

We desire to make special mention of the display of insulated wires and cables made by the following manufacturers of these articles: The Okonite Company, 253 Broadway, New York; Day's Kerite, 203 Broadway, New York; Municipal Cable Company, 7 Arch street, Boston, Mass.; Safety Insulated Wire and Cable Company, 225 West Twenty-eighth street, New York; John A. Roebling's Sons Company, 117 Liberty street, New York; Standard Underground Cable Company, 18 Liberty street, New York.

The primary battery interests were well represented by the Baine Primary Battery Company of 594 Broadway, New York, and the Gordon-Burnham Primary Battery Company, New York, both of these manufacturers having large and attractive exhibits.

The exhibit of the Manufacturers' and Inventors' Electric Company, 96 Fulton street, New York, is worthy of special mention.

The Rolfe Electric Company of Chicago, the Frank E. Bundy Lamp Company, Elmira, N. Y.; J. S. Wilson, Boston; William Roche, New York; Morris & Co., Crocker & Wheeler, William Lawton, Garrett, Miller & Co., Robelin & Co., Pyle Cycle Company, Wilmington City Electric Company, Stock Quotation Company, Western Union Telegraph Company, Postal Telegraph Company, Bell Telephone Company, Delmarvia Telephone Company, Monarch Fire Appliance Company, the International Correspondence School and others had attractive displays of goods and deserve much credit for the attention given to all present.

—Contractor Michael O'Rourke began the first actual work on the big Aramingo sewer, Philadelphia, on Monday morning, October 23. A number of city councilmen and public works officials were present to witness the driving of the first pile. When the work is done Philadelphia will have probably the largest and finest sewer in the world. Contractor O'Rourke will be paid for the work out of the \$11,200,000 loan bill—the item for this particular operation calling for \$200,000. O'Rourke expects to complete the task in ten months.

JACKSONVILLE'S MUNICIPAL LIGHT PLANT.

The city of Jacksonville, Fla., prior to the establishment of its present municipal electric plant, was paying each year \$8,000 for lighting its streets with gas. Now, out of the profits of the sale of electricity at 7 cents per kilowatt, it is paying all expenses of operating the plant, including maintenance of plant and circuits; it is lighting its streets and public buildings, jails, fire stations, armories and all hospitals and charitable institutions, is constantly extending its commercial and street lines, is laying aside a considerable sum for a sinking fund and is paying interest on the entire investment at the rate of 5 per cent. per annum.

The capacity of the plant, aside from that required for city lighting, which has always been made the first consideration, was taken up by private consumers as rapidly as the installations could be made, and in 1898 an enlargement was considered and was ordered by the authority of the city council, which made a grant of \$45,000 for the purpose. This grant was practically in the form of a loan by the city against the receipts from the operation of the plant.

The increase in the capacity was fully 100 per cent. and the smaller cost of the additions, as compared with the original expense, was made possible by the fact that the surplus of steam power and of buildings incorporated in the original plant made it unnecessary to add materially to these. With the increase the problem of furnishing power as well as light was considered, and this is now a feature of the municipal plant.

The completed and enlarged plant was put into operation about seven months ago; the first three months of this time were largely occupied in extending commercial lines, on which the income of the plant depends. The last four months can, therefore, be taken to show the financial operation of the plant and to demonstrate its possibilities as a successful municipal investment. It must be said that during the summer months the consumption of electricity is much less than in the winter, and the statistics given are gathered from the operation during the quietest part of the year.

When the original plant was established the charge made by the private companies was 28 cents per kilo-watt. The city plant was put into operation with a charge of 7 cents per kilo-watt, making the new rate exactly one-quarter of the old. The charge for gas had been \$3 per thousand feet.

On this basis the charge for 2,000 kilo power arc lamp, in use all night, per month, was made \$7.50, against \$15 by the old rate; and arc lamps burned till midnight were charged at the rate of \$6.50, against \$13, old rate. The old companies were forced to meet the rates established by the city, and the price of gas was forced down to \$1.50 per thousand feet.

The charge for incandescent lamps for illuminating private dwellings was fixed at 30 cents per month per lamp, while in business places the rate for the same service was made 75 cents per lamp. In places where twenty-five or more incandescent lamps were used on a single installation, the lights were put on the meter system, and the charge was at the rate of 7 cents per kilo-watt.

For the private consumer the use of electricity at the single lamp rate has

proved the cheaper; but where the consumption has been on a larger scale the meter system has been found much cheaper, being month by month about one-third of the former cost of illumination by gas and furnishing a quality and quantity of light many times better than the former methods permitted.

It has allowed the use of the improved system of lighting by poor families, who formerly used kerosene. The reduction in the number of fires from explosions of oil lamps, on account of the wide introduction of electricity, has been great. There has been effected a saving to the people from the former cost of lighting, when the amount used is considered, of 75 per cent., although it is admitted that if the original prices had been maintained the consumption of electricity would not be what it is.

The general statement may be made however, without fear of successful contradiction, that the annual saving to the people of Jacksonville by the reduction of prices for lighting is more than the entire cost of the plant.

The following figures, taken from the balance sheets of the last four months, are a demonstration of the advantages claimed for the operation of the plant under municipal control:

| EXPENSES. | | | | |
|-------------|---------------------------|-------------------------------------|-------------|-------------|
| Month | Extension and improvement | Superintendence and office expenses | Maintenance | Totals |
| June ... | | \$552 35 | \$2,615 60 | \$2,967 95 |
| July ... | \$372 00 | 583 46 | 2,837 55 | 3,793 01 |
| Aug ... | | 343 22 | 2,414 92 | 2,758 14 |
| Sept ... | 345 62 | 224 33 | 2,590 70 | 3,160 65 |
| Total | | | | \$12,679 75 |

| CREDITS. | |
|-----------------|------------|
| June | \$3,691 01 |
| July | 3,822 87 |
| August | 3,958 44 |
| September | 3,717 57 |

Total from commercial lighting...\$15,189 89

CREDIT FROM PUBLIC LIGHTING AT COMMERCIAL RATES.

| | |
|--|------------|
| 160 arc lamps on streets, 4 months, at \$7.50 per month..... | \$4,800 00 |
| 300 30c. p. series lamps, 4 months, at \$1.50 per month..... | 1,800 00 |
| Total | \$6,600 00 |
| Total earnings of the plant..... | 21,789 89 |

| DEDUCTIONS. | |
|---|-------------|
| Cost of operating plant for four months | \$12,679 75 |
| Interest, four months on investment, \$150,000 at 5 per cent..... | 2,500 00 |
| Depreciation of plant, four months, \$150,000, at 4 per cent..... | 2,000 00 |
| Total | \$17,179 75 |
| Profit for four months..... | 4,610 14 |

The commercial system, from which the income of the plant is derived, includes 85 arc lamps now in use. It also contains 15,000 16-candle power incandescent lamps.

There are now about 1,250 consumers of lights and nearly fifty customers for the power system, which is used for motors, elevators, fans, etc.

The management of the plant is in the hands of the board of bond trustees, who are also the trustees of the bonds for all city improvements. The transfer was made from the board of public works by an amendment to the city charter last summer.

Through the entire history of the municipal control of public works not a breath of suspicion of political jobbery has tainted the management of this form of public enterprise.

VESTED WRONGS.

[A paper by Robert P. Porter, read at the third annual convention of the League of American Municipalities, held at Syracuse, N. Y., September 19-22, 1899.]

The ten reasons given by the honorable secretary of the League of American Municipalities for its existence and extension are admirable and should meet the approval of all, regardless of political or economic views, who favor clean, capable municipal government. When requested to prepare a paper and take part in the discussion of the municipal ownership problem, I intended to be present personally and take advantage of a discussion participated in by those versed in the practical experience of municipal government in the United States. In this I am disappointed, as my work here will not be completed as soon as expected, and I therefore take the liberty to send these few suggestions, with the request that they be laid before the league in such manner as the committee may determine.

It is now nearly twenty-five years ago since I first took up the fiscal problems relating to our states, counties and municipalities, and twenty years since I was called upon by the United States government to write a history of the debt of each state of the Union, and prepare a report on the wealth, debt and taxation of our cities and towns. The result of those inquiries may be found in volume VII. of the Tenth Census (1880). Soon after the war a craze set in for municipal improvements, similar to the present epidemic for owning and operating public utilities, and as a result local indebtedness and taxes had increased so rapidly that in many instances the burden upon the taxpayers was almost unbearable, and in some important cities repudiation publicly advocated. The alarm occasioned by the increase of municipal indebtedness was emphasized in many of the Western states by the large sums of public money voted to aid innumerable private railway schemes, a majority of which had not come up to the great expectations of the promoters and had left the unhappy communities responsible for millions of unpaid bonds. The history of this period of our state and local fiscal history should be familiar to advocates of municipal ownership in the United States. If not they will find much official data of value and interest in the volume referred to, which has a practical bearing on the question at issue. In seeking a remedy for the evil of municipal indebtedness which seriously threatened our cities and towns with bankruptcy during this period, the constitutional limitation of debt was hit upon, and thus the wisdom of the people put a break upon municipal madness. In some of the more flagrant instances, that of Michigan, for example, the people even went further and declared that the state must not be "a party to or interested in any work of internal improvement," so bitter had been these experiments in a theory of government foreign to the sound maxim, that the country is governed the best which is governed the least. This action on the part of the people of that state has saved Detroit from one of the wildest and probably one of the most disastrous experiments in municipal ownership yet recorded. The state constitutional limitation of debt which stopped the debt-creating mania during the seventies and early eighties, will again come in to hold in check these latter-day movements towards socialism and paternalism, until practical men in municipal affairs are enabled to fully examine, not only the many complex questions involved in municipal ownership of all public utilities, but to realize the stupendous change such an absorption of private enterprise would bring about in the fundamental principle of the government of the republic. An effort is now on foot, in my opinion, fraught with great danger to American municipalities, to remove all constitutional and legislative restrictions on municipal indebtedness when the municipalities wish to purchase these so-called revenue-producing properties. Communities, like individuals, soon forget past experiences, and those who see their wild schemes checked by the sober judgment expressed by the people during times of state and municipal bankruptcy, are apt to urge the removal of such constitutional barriers. Should this be done and full swing given municipal ownership experiments, the American taxpayer will simply invite financial catastrophes far more sweeping and destructive than those referred to in the Michigan supreme court decision. Citizens who believe in sound government should vigorously oppose all attempts to remove the constitutional limitation on state and municipal indebtedness. Before you who are responsible for the administration of these great trusts commit

yourselves to the expenditure of millions, nay hundreds of millions, of the people's money, in these daring experiments, it behooves you to acquaint yourselves with all the facts. You must study with the utmost care and impartiality the results of municipal ownership in England. The official reports in relation to the operation of gas works show no special advantage in favor of municipally owned plants. These figures are accessible and in convenient form. You must do precisely the same in relation to British tramways. On this side of the problem perhaps I can speak with some degree of authority, as I have made a careful study of the facts both at home and abroad.* A brief reference will be made hereafter to the results of these inquiries in relation to the municipalization of street railways in England, where we must go for the sum total of experience up to date. For the moment we may profitably examine some recent statements of those who are in the front rank of this movement toward the municipalization of public utilities. Here for example, is the venerable and venerated Dr. Lyman Abbott declaring that "the sooner our cities own the lines of railroads, the better both for the convenience of the people and the purity of our municipal governments." Similar assertions have been made by advocates of municipal ownership, but assiduous search for the statistics, the facts, if there be any, upon which these assertions are supposed to be based, have failed to materialize. As I shall hereafter show, Dr. Abbott, when asked to come and give reasons and facts for his assertions before the New York state committee on street railways, failed to appear. Without facts to sustain these assumptions, the position of such gentlemen as Dr. Abbott is peculiarly illogical and unbusinesslike. The administrators of our municipalities have been too incompetent and too corrupt to make fair and just bargains with private enterprise to carry on works of public utility. What is the proposed remedy? That having sold or leased these rights to do quasi-public business at a public loss, the same incompetent and corrupt officials or their successors shall now buy them back again—at an excessive valuation, as in the case of Detroit—and manage such trusts for the convenience of the public and in the interests of municipal purity. And this in the face of Professor Bemis' declaration that a large portion of the force employed on the Philadelphia municipal gas plant was made up of ward heelers, faithful only to their allegiance to a political boss. He frankly tells us:

"The works under public operation would have shown better results than were obtained had it not been for the spoils system, general inefficiency and unprogressiveness."

The position of these eloquent phrasemakers must strike practical administrators as grotesque. The practical man knows that cities, like individuals, have made both good and bad bargains with private corporations. That where one of these bargains has been corrupt, a score, nay fifty or a hundred, have been square and honest. They know that oftener than not the cities in the first instance have been glad to secure the improvement, whether a new water works, additional and improved gas plants or electrical street railways, as the capitalist has been to invest his money. They know full well that in many cases capital has been coaxed into the enterprises. Indeed, I know personally of the case of a bankrupt street railway in a Western college town which the present operators—the people who furnished the equipment—attribute the bankruptcy wholly to the eloquence of certain college professors, who persuaded the original promoters to lay the line up to the university settlement in advance of public necessity. I have no doubt some of these very gentlemen are lecturing on the iniquities of "capitalistic aggregations" and kindling the fires of "a new application of ethereal principles" for effectual vengeance for such folly. These theoretical gentlemen, who talk so glibly and eloquently on municipal ownership in the abstract, and conveniently fail to appear when a New York or Massachusetts commission are considering the concrete sides of the question, have little conception of the real obstacles which prevent practical administrators from rushing headlong into these municipal experiments. The value of the lines of railroads which Dr. Abbott thinks we should at once own will in 1900 be in the neighborhood of sixteen hundred millions of dollars (\$1,600,000,000), add to this another one thousand million of dollars

(\$1,000,000,000) for municipal gas works, and we have a total of two thousand six hundred million of dollars (\$2,600,000,000). If state constitutional barriers could be overcome to accomplish this, the municipal indebtedness of the country would be more than quadrupled, or increased from eight hundred million dollars (\$800,000,000) to three thousand four hundred millions of dollars (\$3,400,000,000), which is simply a preposterous proposition. The fact is, not one of these able generalizers in municipal ownership could face one of the practical mayors or practical municipal comptrollers present at this convention with a practically worked out scheme for the acquisition and management of a water works, a gas plant or an electric street railway. I mean a proposition that would be accepted in the financial world and stand the test of the courts. The Rev. Dr. Washington Gladden, of Columbus, Ohio, forcibly expresses a sentiment, which a fair-minded writer in that ably-edited newspaper, the Brooklyn Eagle, says "has run like wildfire through the West and has reached the East." Dr. Gladden says:

"There is one class of capitalistic aggregations, based on monopoly, against which popular indignation is likely to be kindled even sooner than against the so-called trusts. I refer to those which are founded on municipal franchises. Most of the companies owning these franchises have issued capital far in excess of their actual investment, have disposed of the stock thus issued and are charging enough for the services rendered the public to pay the dividends on all this watered stock. If they were content with a fair return on what the plant has actually cost them, the price of the service could be greatly reduced. A fair return on their actual investment nobody grudges them, but the privilege of taxing the community to pay dividends on two or three times as much money as they have invested is going to be questioned one of these days. When the reckoning day comes to our monopolies some sharp inquisition may be made into the fundamental equities of many of these institutions. Vested rights will be respected, I have no doubt; but vested wrongs may be called to account. It is probable that some new legal maxims will be framed and enforced and that our jurisprudence will be enlarged and invigorated by a new application of ethical principles. Whether corporations in any sense private will long be permitted to manage public utilities may be doubted; but if they do they will certainly be required to govern their conduct by a strict regard for the public welfare."

Commenting on this, the Brooklyn Eagle writer says:

"In this statement made by Dr. Gladden is the principal charge in the indictment which the advocates of municipal ownership have brought against corporations owning surface railroads, gas, electric light and telephone plants. You will find the same charge made by Professor Bemis in his book on 'Municipal Monopolies'; the same charge is being made from pulpits and the chairs of college professors all over the country. With the truth or falsity of this charge the writer has no concern in the writing of these letters; for he is dealing with facts, as they have been found. Yet one may be permitted to say, without being open to the charge of bias, that this charge has, so far, not been answered."

This sweeping and general and unsupported charge has, in my opinion, not been answered specifically, in the first place because there is no specific charge to answer. Professor Bemis himself seems to be in despair in relation to gas statistics for comparative purposes, and yet for years he has made a specialty of this branch of the subject. He has given us a bewildering assortment of statistics, and led us into the labyrinthine mazes of gas statistics until we supposed the subject exhausted and municipal ownership in gas works a mathematically demonstrated success. And now he says:

"It is indeed difficult to gather statistics of any value upon electric and gas lighting. The bias of the investigator, the secretiveness of the private companies, the poor bookkeeping of many of the public companies and the fact that the conduct of a public plant, especially one united with a water plant, does not require the keeping of accounts in the way most conducive to comparisons with other companies, account for the well-grounded distrust of most lighting statistics."

Here we have the unscrupulous secretiveness of the private companies, that was to be expected from Professor Bemis; but what are we to think of the "poor bookkeeping of the public companies?" I have recently examined some excellent official statistical exhibits relating to the principal gas works of England, and find them capable of comprehension by the ordinary mind. The cost of management and of product to the consumer is clearly set forth

—municipal gas works on the one side and private gas works on the other—and the result by no means favors municipal ownership. Yet the so-called "spoils system" does not prevail in England. The gas and electric light commission of Massachusetts have recently published a very comprehensive volume of gas and electric light statistics,* in which similar comparisons are made between municipally owned light plants and privately operated plants, to the detriment of the former. The public seem to pay higher for the municipal than for the private gas company. I believe a similar investigation is in progress of completion by the National Department of Labor, which will include the principal cities of the country. This should give us considerable valuable data on the subject. Data that will go far toward answering the question whether these companies are rendering good public service for a reasonable and fair profit or not. Until we can thus survey the whole field it would seem to be injudicious to use strong language and kindle the fires of hate against those who may not deserve such harsh treatment when all the facts are made known.

It is to be hoped that Professor Bemis' announcement, that there is a "well-grounded distrust of most lighting statistics," is not due to the fact that the figures published do not point his way. Certainly the English official returns and those from the last Massachusetts report do not support his theories, while many of his other comparisons have been seriously questioned by those who speak with expert authority. Take, for example, the Philadelphia case, which has been quite roughly handled by Professor Bemis, and yet it has turned out an admirable arrangement for the municipality. An arrangement, by the way, which some of the cities owning their gas works would be wise to follow.

In pursuance of its contract, the United Gas Improvement Company has spent in betterments on the Philadelphia gas plant, from December 1, 1897, to June 1, 1899, \$4,049,541.72. It turned into the city treasury for old gas bills collected, being bills for gas supplied by the city prior to the date of the lease, \$707,340.09. It has paid into the city treasury the amount of the inventory of materials on hand at the date of the lease—being coal, lime, etc., \$187,678.73. It has paid into the city treasury 10 per cent. on all collections from the date of the lease to July 1, 1899, \$467,628.41. It must be remembered that the company is not paying for a franchise, but is paying rent for the very valuable gas-making property of the city, upon which it is also bound by the terms of the lease to expend these large sums of money in betterments. Cities that are tempted to follow the lead of Governor Pin-gree and Mayor Jones into municipal ownership of "public utilities" will do well to wait until there are more abundant materials for a comparison of the results in a great city of municipal and of private gas production and distribution. Fortunately for Philadelphia, the company making this contract with the municipality consisted of men of the highest integrity and at the same time represented the highest grade of experience in the manufacture of gas. They can furnish a better commodity for less money than any municipal plant, and hence, while they make a reasonable and fair profit themselves, they serve the community far better than it has ever been served before. If Philadelphia would take precisely the same course with its water works the public would be better served and millions saved to the taxpayers.

As a rule, these college and pulpit charges are vague and only supported here and there by stray facts, largely culled from inflammatory newspapers. The charges made by Dr. Gladden and by Professor Bemis may be, and probably are, true in some particular instances where private capital and peculiar conditions have enabled private corporations to drive good bargains with the administrators of public corporations. In a majority of such cases, however, it will be found that the "vested wrong" has become so by reason of unexpected growth or prosperity of the community, and not because the contract when made was at that time against public welfare. The only remedy in such cases is more care in the future on the part of municipal administrators. Reasonable leases should be made, instead of franchises in perpetuity. Our present municipal administrators are more awake to this. In New York the new state constitution limits such franchises to twenty-five years. This is a practical way to prevent the perpetual franchises. And yet if these gentlemen will take the trouble to study the history of some of the worst of these "vested wrongs," they will find that many of the most profitable of them went begging for

*Annual report of the Board of Gas and Electric Light Commissioners of the Commonwealth of Massachusetts January 1899.

*"Municipal Ownership and Operation of Street Railways in England," by Robert P. Porter. Report of the special committee to investigate the relation between cities and towns and street railway companies. Boston, February, 1898.

"Municipal Ownership at Home and Abroad," by Robert P. Porter, 100 Broadway, New York.

years. That the communities looked upon the promoters as public utility cranks, instead of public utility thieves. That the original enthusiastic owners were buffeted from pillar to post in their endeavor to find capitalists willing to risk their money to operate them, and that the present "deplorable condition of affairs" is as much due to the persistent and stubborn growth and prosperity of these American cities as to the inherent dishonesty and wickedness of the "capitalistic aggregations" which incite the righteous indignation and wrath of these public spirited gentlemen.

So far as my own personal inquiries in relation to municipalization of street railways indicate anything they clearly point out that the glowing accounts we have had of such experiments by returned American travelers from the other side are valueless when submitted to practical American tests. Not only are the statements of success and profits greatly exaggerated, but municipal ownership has not made anything like the headway in the United Kingdom which many would have us believe. Indeed, there is much misapprehension in the United States on this subject. Some accounts would seem to indicate that England has municipalized such undertakings as water, gas, electric lighting, and street railways to a much greater extent than the facts warrant. In reality, if an absolutely accurate comparison could be made between the United Kingdom and the United States, it is doubtful which of the two countries would lead in this respect. I refer, of course, to public service, with profit-earning possibilities. For example, should we consider the four important branches of service—the supply of water, gas, electric light and street railways—together, it would be safe to say that honors in favor of the municipalization of these undertakings would be about equally divided in the two countries.

To those without practical experience in handling such vast undertakings, and who therefore cannot possibly realize the obstacles in the way of turning over such stupendous enterprises as these, requiring, as they do, so much expert knowledge, to officials in no way specially trained, municipalization is no doubt a fascinating idea. Hence we find many writers at home taking it up with avidity, and as a result the literature on the subject during the last decade has increased far more rapidly than the experiments themselves. A few instances of municipal ownership have been made to do duty for so many books, essays, lectures, and articles that the practical man of affairs is beginning to inquire for additional particulars. Exaggerated and enthusiastically written accounts of the municipal millennium of Glasgow and Birmingham no longer arrest his attention; while the sudden change in public sentiment in 1894 in favor of a halt in the startling experiments inaugurated by the London County Council has greatly increased the doubts of those who are not sure that, even if the success in this direction had been as great as intimated in England, similar experiments might not be fraught with great danger this side the Atlantic.

The results of my own inquiries into the working of municipalized street railroads in England are supported by almost identically the same investigation and analysis of the same facts by Benjamin Taylor, F. R. G. S., who thus sums up his facts in the August (1899) Cassier's Magazine:

"This review then, of municipal enterprise in the working of tramways in the United Kingdom, leads to the conclusion that in no single instance has it been perfectly successful. Glasgow furnishes the nearest approach to success, but in Glasgow, with a small track for an enormous dependent population, it would take very bad management indeed to produce financial failure.* And in Glasgow the system is a very long way short of perfection, while the retention of horse haulage renders the future exceedingly insecure. In no single instance can the municipal working of tramways be demonstrated to be a commercial success; and in no single instance has municipal management fulfilled the socialistic ideal, either in respect of its servants or its passengers."

It is a very significant fact that Mr. Taylor, writing from the British standpoint, and conducting an investigation entirely independent, should, with the same facts and figures before him—the official reports of these several enterprises—arrive at almost identically the same conclusions as those which you will find in the paper which I

*Mr. Taylor is correct in this statement, and he might have added that an American company at the time Glasgow took over the tramways stood ready to lease the enterprise and pay a cash sum annually into the Glasgow city treasury for a permit of twenty-one years far in excess of the profits of any year. Not only this, but the fares were not to be increased.

had the honor to submit in response to a request from the chairman of the Massachusetts state committee in December, 1897, and which will be found in extenso in the report of that committee. Again Mr. Taylor says:

"The writer does not hesitate to say that any well-managed company, in possession of the advantages which any of these corporations, whose work has been reviewed, possess, would have long ere this produced better results, both for itself and for the public. Nothing is said of the serious dangers and onerous charges that may await the ratepayer as the result of what Lord Wemyss calls 'the mad move of municipalities toward the municipalization of everything—gas, water, tramways, in the present and all other things in the municipal future.'"

The fact that these socialistic experiments rarely meet the anticipation of the labor side of the problem is receiving emphasis at this moment in London. Last month, when in London, the newspapers were giving in detail the woes of the County Council tramway employees, who were piteously calling upon their brother omnibus drivers—employed by soulless private corporations, but as well paid as any labor in Great Britain—to come to their rescue. When in London the general secretary of the union gave me a brief list of the grievances of the men thus employed by the London County Council—the body that started out six years ago to relieve all the burdens of London labor and London poor. From this it appears that the men are being asked to sign an agreement to work under the Council's rules and regulations, many of which are said to be decidedly unfair towards the workers. In one case, by rule 33, the men are required to be always within call. During their hours of rest they are liable to be called upon at any moment to begin work, so that they dare not leave home, and cannot call a single hour of the week their own. Again, by rule 31, any disparaging remarks made by employees concerning the conduct and management of the tramway system are to be treated as a breach of the rules, and rule 35 provides that any such breach of rules may be punished by instant dismissal. Further, although a workman is liable to instant dismissal, he may not leave of his own accord without giving a full week's notice. The workmen also object to the exceptionally long hours which they are called upon to work, one instance being an unbroken period of twelve hours and twenty minutes on Sundays. The extra men, moreover, are obliged to loiter about the yards for hours without getting a job, and their work is paid for at the rate of 9s. a week less than that of the regular workers. The men complain that they have been left in the lurch by the Council. The London County Council has always prided itself with being a model employer of labor. Now these men openly claimed to me a few weeks ago that the union could prove that the London County Council was the worst. The tramway enterprise has been conducted contrary to all the principles of trade unionism. Surely the second condition of these men is worse than the first. A London newspaper in an editorial takes this view of the subject:

"What seems most likely is that, when the Council came to examine the subject of tramway administration practically, they found that the prospects of extensive improvement in the conditions of labor which the advocates of 'Collectivist' control had held out could not be realized without throwing upon the rates additional burdens, for which even a Progressive majority lacked the courage, when it came to the pinch, to become responsible. * * * What it means is that the pressure now applied to the men will be transferred to the masters; that under pain of losing votes the Progressives will be urged to concede what their servants insist upon. It would be an interesting struggle for outsiders to watch, if it did not seem so very probable that the settlement will be arranged at their own expense."

This is a phase of the municipal ownership question which American taxpayers will do well to study. When the wages of men become political questions, the men will likely get the increased wage, the political party the votes, and the taxpayer the bill of expenses. If it should appear that, with officials less subject to political influences than the officials of American cities, England has made no greater headway on the whole in the municipalization of such undertakings as water, gas, electric lighting, and street railways, then it may be worth while for us to study more carefully that middle and safer ground which may be found in good working condition on the continent, and which has been able to obtain the best expert service of private enterprises with such municipal control as absolutely protects the public interest; in other words, the highest efficiency of serv-

ice, adequate compensation for rights and franchises conferred, reasonable public control, without making the municipality an enormous labor-employing bureau, with its innumerable complications and stupendous dangers.

It is doubtful, when all the important factors of the problem are taken into consideration, if the advocates of municipal operation can point to a single instance in which such service is performed better and cheaper and on more intelligent principles abroad than in the United States. If American labor would be contented with the foreign scale of wages, we might be able to give our theoretical friends even lower car fares than they now enjoy. This statement is made, however, as the lawyers say, without prejudice to the claim which I believe can be sustained, namely, that in spite of the great difference in wages, such service is performed in the United States to-day as well and cheaper than similar service in any European city.

Politics, red tape, ignorance, timidity, opposing interests, and the deadly fear that private enterprise should make a dollar profit, have all helped in England, and to a lesser extent on the Continent, to retard the extension of street railways to meet the pressing demands of population. In America, however, private capital has had full swing, and with a courage almost akin to recklessness has not hesitated to discard, regardless of cost, one system of propulsion as fast as a better offered. Whatever the sins of the American street car man may be—and, like all the rest of humanity, he is far from perfection—he is up to date. He has planned his railway system on broad lines, including the districts that pay and the districts that must be run with a loss. He has gone ahead and taken his chances with the rest of the community, pinning his faith on the growth of the city and the increase of the suburban districts. He has not been contented to pick up the pennies within the city walls, but has boldly branched out in all directions, building up suburban districts where none existed, and increasing real estate values along the route. The American street railway man may have driven good bargains for himself, and directly he may not pay much into the coffers of municipalities as toll for the use of the streets, as his co-laborer beyond the Atlantic. Weighed, however, in the balance of good business and common sense, he can point to achievements which far outweigh the results attained in England, where municipal pettifoggery has effectually soaked the enterprise out of street railways, and on the continent, where private enterprise has only been allowed to go ahead after being enveloped in a sack of governmental restrictions. Instead of petty railway budgets, showing so much profit to the municipality, the American city can point to largely increased real estate values, and millions added to the tax rolls, in a large measure the result of distributing the population of our cities beyond the boundaries far into the country districts. Look at the area of American cities compared with the larger cities of Europe. Without cheap and rapid transit, all the recent extensions of the boundaries of our cities would have been impossible.

The American street railway man may therefore point with righteous pride to his track mileage, exceeding by 6,000 miles that of Europe, to the 4,000,000,000 passengers which he annually conveys to and from their homes, and to the fact that he has not waited for the population to come to him, but has gone out, true American fashion, in advance of population, and built up districts at great expense, which he now works with a profit, not alone to himself, but to the city whose revenue from taxes is thereby increased. On the question of charges, the American street railway compares favorably with similar systems abroad. In the first place, we have solved the question of a uniform fare, while nearly every municipality which I have visited in Europe is struggling, apparently hopelessly, with this question. Why? Because the municipality has not the courage of private enterprise. A uniform fare, it is contended, gives the longer haul an advantage over the shorter; so, to avoid this, in Glasgow the acme of absurdity has been reached by a one-cent fare for a trifle over half a mile. It is far better for a man to walk half a mile than to ride anyhow, and quicker, it seems to me, after trying halfpenny fares on the newly inaugurated municipal horse tramways of the Scottish city, which social reformers claim has solved the true art of municipal government and municipally operated transit.

With their eyes bent on the puttering short haul, the street railways of the United Kingdom and, to a lesser extent, of continental Europe, have failed to realize that it is the cheap long haul that relieves the congested spots of our great cities; that creates cheap homes; that carries the people into

the suburban districts; and, lastly, that builds up new taxable areas, which ultimately give back to the city a hundred fold more than it would ever make trying to do for itself that which can be far better done by private ingenuity, economy, and enterprise. So Liverpool and London and Paris are all at this moment in their new street railway enterprises agitating the uniform fare question, as though it was something new and strange and wonderful. To the canny Scotch mind, however, in Glasgow, it seems a dreadful thing that one passenger should get a fifteen-mile ride for the same price paid by another passenger for the privilege of going one mile. I say fifteen miles, but on this point I may be corrected, because it was only the other day I was told that in New York city you can now ride for five cents along twenty-five miles of road and through territory which ten years ago would have cost you twenty-five cents and three hours' time. The efficacy of the American nickel, it is true, has helped us out; though with the elaborate systems of transfers inaugurated in the larger cities, the actual American fares can not be measured by five cents. In New York city the enterprising Metropolitan Railway Company have, during the last three years, increased their transfer system from thirty-two millions in 1896 to sixty-four millions in 1897, to ninety millions in 1898, and to one hundred and thirty millions in 1899, thereby reducing the average fare to about three and a third cents, less by more than a quarter of a cent than the average fares on the omnibus of Paris. In London, where the "Penny Bus" is so much in evidence that one would imagine they could get all over London for two cents, the mean rate per mile is nearly two cents—that is .92 of an English penny. The tramways of London charge over one and a half cents per mile, and the fares range, as do those of the omnibus, from two cents to twelve, according to distance.

But these are mere details and I have no intention to burden you with details. We cannot reach a safe plane of comparison between European and American municipalities without a proper understanding of the two systems of local government, and especially of the relations of central and local government in the two countries. The first essential, in my opinion, is to determine the position of the city correctly and definitely. If after this we shall find that in England—and in a greater degree on the continent—the municipality is both an agent of the state and an organization for the satisfaction of local needs, may not some of these reformers have to begin their work all over again and become advocates of the great central power, such as that possessed in Germany? In that country state ownership of railways has, perhaps, met with a measure of success as a producer of governmental revenue, though not as a medium of quick, cheap, and efficient transportation, as in England and the United States, where the railways are in private hands. Yet Germany draws the line on street railways, and the future policy of that happy hunting ground of the advocates of state ownership and operation of profit-earning undertakings will be in the direction of private operation, and moderate municipal control. In support of this, and also in support of my claim that the English experiments in municipalization of street railways are inadequate, let me call attention to the following paragraph in the report of the Massachusetts special committee appointed to investigate the relations between cities and towns and street railway companies:

"As yet no attempt at the municipalization of street railways has been made in any country on a sufficiently large scale and for a long enough time to be of real significance. Glasgow and Leeds, for instance, are the two European instances more frequently referred to. From the statements often met with in the press, and the assertions heard in discussion, it might well be assumed that the experiments made in these cities amounted to an indisputable and established success; whereas, in point of fact, such is in no degree the case. (Those seeking further information on this subject are referred to a very interesting, as well as instructive, paper submitted to the committee by Robert P. Porter, superintendent of the United States census of 1880, printed in the appendix to this report.) So far from being a demonstrated success, it may, on the contrary, be confidently asserted that nowhere, as yet, has the experiment of municipalization of street railways been worked out to any logical and ultimate results whatever, nor can it be so worked out for at least a score of years to come. Even then, political habits, social traditions, and material and economical conditions vary so greatly, and enter to so large an extent into the problem, that it will not be safe to infer that what may have proved safe and practicable in one community is either practicable or safe in

another. At the present time, the municipalization of the street railways is not accepted as by any means indisputably desirable in Great Britain, while in Germany it is regarded unfavorably. This last fact is the more noteworthy, as Germany has been the field in which state ownership and management of steam railroads has been developed to the fullest extent, and with results pronounced to be unquestionable, as well as most satisfactory. The grounds for this apparently illogical action and contradictory policy were, during the last summer, briefly set forth to a member of the committee by the highest German authority. They were purely practical. The state official referred to simply said that Germany had carried officialism as far as, in his judgment, it was prudent to go. The government employees tended always to increase; and there, as here, it was found that employment by the government signified much which did not at once appear. The line had to be drawn somewhere; and it was not considered expedient to add to the number already existing the numerous officials and employees of all the street railway systems in the empire."

The member of the committee referred to in the report was the Hon. Charles Francis Adams of Boston, one of the clearest-headed and fairest-minded men we have in public life, and an expert in railway matters. I had several conferences last autumn with Mr. Adams on this subject, and found my own conclusions identical with his, after having independently gone over much the same ground. Since then I have spent two months in Berlin and conferred with the same officials and can personally vouch for these opinions being generally held in Germany. The fact is, we are not yet prepared for the German system of centralization in the United States, nor do I see in the English experiment in municipalization anything particularly attractive, either from the standpoint of service rendered, or pecuniary results to the municipalities.

In its conclusion the Massachusetts committee says:

"So far as Massachusetts is concerned, the committee apprehends that great difficulties of a practical as well as theoretical character would present themselves, should a serious attempt be made at the complete municipalization of street railways."

And this should be the general conclusion of all who impartially study the question. The old aspect of municipal administration dealt with the paving and lighting of streets; the supply of water; the construction of sewers; in maintaining order and occasionally in the establishment of parks. The new phase of municipal administration, in its most ambitious form, aims to deal with every question that directly or indirectly affects the life of the people. Carried to the extent which it has been in some British cities, it is in fact municipal socialism. The new school of municipal administration in England enters into the life of the people. It not only takes upon itself the unprofitable side of the local budgets, but argues very plausibly that a well-governed municipality can afford to give no privileges by which corporations may enrich themselves at the expense of the community; that such profits belong to the community at large, or should be used to promote the general welfare. Beginning with the municipalization of gas and water, the idea has extended to tramways, markets, baths, libraries, picture galleries, technical schools, artisans' dwellings, cricket fields, football grounds, tennis courts, gymnasia for girls as well as boys, regulation of refreshment tariffs, free chairs in the parks, free music, and, last though not least, it is proposed to municipalize the ginshops and public houses.

The only limit on the non-profit-paying work which a municipality may do is, it might be inferred, the capacity of the assessment roll and the amount the ratepayer is willing to pay. On the profit-paying work, however, the real, vital, debatable question, which the growth of the municipal idea or municipal spirit is forcing to the front, is: How far can municipalities go in this direction without undermining the whole fabric of free competition? In thus becoming its own builder, its own engineer, its own manufacturer, does a municipality enter too much into direct competition with private industries? Does it undertake work which individuals are at least equally able to perform? If this be so, is there not danger of those of us who applaud the tramway enterprise of Glasgow, the real estate scheme of Birmingham, the municipal tenements of Liverpool, the hydraulic power and ship canal venture of Manchester, the abolition of slums in Bradford, and the grand municipal achievement of Leeds, ultimately finding enterprises other than those in the present catalogue taken up by municipalities? The question then arises, to what extent is it safe to trust municipalities in this direc-

tion? The Hon. John Boyd Thatcher, mayor of Albany, has said:

"If the city may do those things for the individual which he cannot do for himself, may it do for him those things which he finds it convenient to do for himself? If it may care for his safety and his health, may it also care for his morals and his comforts? If it may build him an academy to educate a sound mind, may it build him a gymnasium to develop a sound body? If it build a gymnasium to train his muscles, may it erect an arena to test his prowess? If it publish police rules and regulations for his conduct, may it establish an ethical college to teach him the foundation of obligation? If it may teach him ethics, may it teach him religion? And may all these things be done at public expense? Here our vessel breaks from its moorings and drifts toward the beautiful but dangerous coast of paternal government."

It has undoubtedly been shown that the experience of many cities has proven beyond a doubt that the municipal ownership and management of transportation lines, water works, lighting works, markets, docks and other works rendering common public service may be of immediate advantage to the public under some conditions. But is this advantage reaped at the expense of the future? Do not the economic undertakings of government only emphasize the failure of government to govern? These are social questions, and must be answered by the sovereign body in each country of the world.

In brief, is the state to be supreme? That, after all, is the vital question before the country to-day. Herbert Spencer, looking out over the civilized world with the clear eye of a trained observer, declared the tendency of nineteenth century thought to be in the direction of a socialized government, remarking incidentally:

"Every additional state interference strengthens the tacit assumption that it is the duty of the state to deal with all evils and secure all benefits. Increasing power of a growing administrative organization is accompanied by decreasing power of the rest of society to resist its further growth and control. The people at large, led to look on benefits received through public agencies as gratis benefits, have their hopes continually excited by the prospects of more. A spreading education, furthering the diffusion of pleasing errors rather than of stern truths, renders such hopes both stronger and more general. Worse still, such hopes are ministered to by candidates for public favor by countenancing them. The current assumption is that there should be no suffering and that society is to blame for that which exists."

When you open up these questions you touch upon broader problems than I am capable of discussing. On the question itself in hand, of how far we can go with municipal operation, there is a wide divergence of opinion in the United States. There are strong advocates of municipalization, favoring almost any sacrifice for the purpose of improving municipal life, enthusiastic believers in municipal ownership of anything and everything—in Great Britain—who emphatically say such a policy is mistaken when it is proposed to introduce the ownership and operation of similar undertakings into the cities of the United States. Attention is called to a recent report made by a committee of the New York legislature, after examining many expert witnesses and taking two large volumes of testimony. The committee, in summing up its conclusions in relation to municipal ownership, said:

"But few have advocated the ownership and operation of railroads by the cities. The preponderance of testimony taken and the great majority of opinion expressed before this committee is against the system so commonly referred to as 'municipal ownership.' It is obvious that, with our present system of municipal government the ownership and operation of railroads by the cities and municipalities would have a tendency to convert these enterprises into powerful political machines, the result of which would be detrimental to the public welfare."

Before that committee was summoned Dr. Albert G. Shaw, whose volume on the municipal administration of certain foreign cities ranks among the classics on this subject. Upon the subject of municipal ownership he gave this testimony:

"I have never dreamed of advocating municipal ownership in the city of New York. I have never thought of it as a remedy. I do believe, if there is nothing in existing charters to prevent legislative remedy, that it might be possible to bring the whole business of transit in the city of New York under a better and more efficient public supervision, to the end of giving us some relief here."

On cross-examination, the whole case of municipal ownership based on European experience fell to pieces; for Dr. Shaw, while taking the ground that American

cities had perhaps been unwise in not valuing more highly the privileges they had conferred upon companies, substantially took the ground that comparisons between European and American cities for elucidating these problems were of little value. Dr. Shaw said:

"I recognize, on the other hand, the exceptional enterprise of many of the American street railway companies, and the immense advantage our communities derive from such facilities as they have; but I do not believe enterprise would have been checked if municipal treasurers had guarded financial possibilities a little bit more closely. I think these are questions of fact, to be worked out precisely as I judge your committee has been doing, by getting out precisely the kind of facts they were obtaining from the witness who preceded me. I do not believe the conclusions derivable from the experience of foreign cities, although I have been interested in them—but I never believed any experience derived from them of any applicability to our cities; but they throw some little side lights that are interesting, but conditions differ, but our heads are as clear as any one's, and we should be able to derive and work out deductions and true conclusions."

The New York committee did its utmost to secure the attendance of all advocates of municipal ownership, and in some cases subpoenaed some of the most prominent, Dr. Rainsford and Dr. Lyman Abbott, for example. Neither of these gentlemen, however, appeared. Yet I have already shown that Dr. Abbott wants our cities to immediately absorb all street railway lines.

Speaking directly on the ownership and operation of street railways by cities, the committee said:

"We unhesitatingly disapprove of the idea of municipalities owning and operating street railways. There may be, however, circumstances under which it is both feasible, practicable and economical for the city to construct and own the road-bed itself, and permit its operation by a private enterprise, under the direction and control of the city; but even that time is not yet at hand. The street railway systems of the state are, and for a period of five or six years have been, in a perfect state of transition."

The closing paragraph of the part of the report relating to this phase of the subject is both unhesitating and conclusive:

"Under all conditions and circumstances, it would seem that ownership and operation of street railways by the municipal authorities is quite impracticable at the present time. As an abstract proposition, we believe that no government, either national, state or municipal, should embark in a business that can be as well conducted by private enterprise. The reverse of this proposition carried out to a logical conclusion would put all business enterprises under governmental management and control, and leave to no citizen any hope, ambition or aspiration beyond that of seeking an official position that affords a meager existence."

It would be difficult to frame a more powerful argument against so dangerous a policy than this one put forward by the New York legislative committee. There is such a thing as carrying government interference too far, and the danger in all such experiments arises from the fact that one step leads to another. From municipal ownership we may go to municipal socialism; and from municipal socialism remember that the distance is not far to state socialism. Are you ready for this?

GETTING A CITY ON A CASH BASIS.

"Not paid for want of funds." Should such an endorsement be made upon drafts or checks of a mercantile establishment or a man in business, it would indicate approaching insolvency and the shadow of the sheriff soon to fall across the doorway.

Yet somehow we have become accustomed to witnessing the above words written on the back of the drafts of our cities, year after year, and scarcely a protest has been uttered by the taxpayers. It is true, that the creditors of the city when they are first apprised that the funds have been depleted and payment has been suspended, are apt to mutter a discontent and wonder why a big municipality with its thousands of citizens and millions of wealth can't pay its bills as promptly as the dry goods merchant across the street.

And he has just cause to wonder.

Of course we city officials who under-

stand the sources of revenue at the command of the municipality can explain the situation. We know that the fiscal year of most cities ends on June 30 of each year. Our tax levy has been gauged to meet the expenses for that year and these expenses must be met out of the revenue of that year. It is rare that much of a surplus remains to the credit of the several funds on that day, and perhaps it is fortunate, for the city's creditors at least, if we do not have a deficiency. We therefore start in business on the first day of July, in popular parlance, "broke." The first installment of the year's taxes is not available until the first of December. Here we have five months' expenditures to meet, and with very little revenue with which to meet them.

Fortunately, however, our credit is good, and while we are not allowed to borrow money, our creditors can, and they can discount their demands, and dispose of their warrants to some bank or money-lender who charges them, in most instances, a pretty heavy discount.

Now this is not fair to the employees and creditors of the city. Most of those whose demands are thus subjected to the shave of the warrant broker, are comparatively poor men and the loss and inconvenience which is imposed upon them during several months in every year is gravely serious. If such a state of affairs should annually occur in the conduct of a mercantile establishment, we would certainly ascribe to the manager thereof a woeful lack of sound business judgment.

Moreover, the system is a bad one, outside of its effect upon the city's employees. Those who sell supplies to the city and knowing that in the first part of the fiscal year, the payment therefor is almost sure to be withheld for a time, invariably charge the city for this delayed payment by an increase of prices. It also is apt to create the suspicion that the previous year's revenue has been wastefully, or even corruptly, expended. That a city should be unable to meet its bills gives rise to the suggestion that the city fathers have not been as prudent as they should have, or they would have seen that a surplus had been carried over from the preceding year. To that extent it brings the whole municipal management into disrepute, without a correct understanding of the situation on the part of the taxpayers.

But the conditions are familiar to all of us who are at all conversant with municipal affairs. The question is: How shall the system be changed; how is it possible to get on a cash basis and stay there?

The city of San Jose is in a fair way to solve the problem. The present freeholder's charter was adopted in 1897. It took effect practically at once. Among the provisions of the charter is the following:

Section 5. The operation of the provisions of this chapter requiring the revenue for the fiscal year to be actually paid into the treasury before any expenditure can be made or liability incurred against any specific fund shall be suspended if at the beginning of the first fiscal year after the adoption of this charter there shall not be sufficient money in said several funds, added to what would be available from other sources, to meet all legal demands against the treasury for the first five months of said fiscal year. In such case the mayor and common council shall create a fund to be known as the cash basis fund, for the purpose of putting the payment of the running expenses of the city government upon a cash basis, and to be used for no other purpose, and annually thereafter until the purpose for which said fund was created has been accomplished shall, at the

time of levying other city taxes, levy not less than five cents on the one hundred dollars assessed valuation of property for such fund. This tax of five cents shall be within the one dollar limit fixed by this charter in section 2 of the article on revenue. The money thus collected shall be allowed to accumulate in said fund until it shall be sufficient, together with the money already in said specific funds, to meet all legal demands against such funds for the first five months of the next succeeding fiscal year. At the beginning of said fiscal year the mayor and common council shall direct the treasurer to apportion, and the treasurer shall apportion, the money in said fund to the several specific funds in like manner as other moneys are apportioned. When the money in said fund is so apportioned said cash basis fund shall be abolished, no further levy as provided in this section shall be made, and the said suspended provisions of this chapter shall thereafter become and continue in full force and effect.

It will thus be seen that a fund in the nature of a sinking fund must be provided each year, which, when it is sufficiently large, must be used to replenish the several funds during periods when they are depleted. Thus the tax levy for the fiscal year 1887-8 provided for a five cent tax on each \$100, for the establishment of a "Cash basis fund." In that year the sum of \$9,166.01 was placed to the credit of that fund. The next year a similar levy was made, which yielded \$7,935.30. It is estimated that \$42,000 will be necessary to make the fund complete and available. As another levy has been made this year, it will only require two years more to complete the creation of this special fund. On July 1, 1902, there will be, approximately, \$42,000 in the "Cash Basis Fund." On that date this sum will be apportioned among the several funds that are in a depleted condition, and upon which the demands will exceed the revenue prior to the receipt of the first installment of taxes in December. Then, as it is expected that sufficient revenue will have been provided to meet the whole year's expenses, a surplus, equal to the sum previously apportioned, will be on hand at the end of the fiscal year, to be used to meet all demands until the succeeding December.

Thus we are creating a working capital, which we expect to use as a sensible business man would in his private affairs, viz., to pay our debts in cash; to pay as we go. We can buy for cash at the lowest spot cash prices, and take advantage of offered opportunities to get bargains, which we cannot now do "for want of funds."

But it must not be imagined that we are introducing this system without considerable inconvenience. Our charter permits a tax levy of but one dollar on each \$100 of assessable property for all purposes. Our charter also provides that the assessment and collection of taxes shall be done by the county assessor and county tax collector. The city officials have no control over the property valuations of the city; not even acting as a board of equalization. Thus our assessment roll decreased over \$2,000,000 during the first year of our charter. Then the fiscal year was changed from April 15—fixed by the old charter—to July 1. This necessitated paying fourteen and one-half months' expenses with twelve months' revenue.

The present administration of the city of San Jose was installed in May, 1888. All funds were well nigh depleted; fourteen months' expenses had to be provided for instead of twelve; we were limited to a tax levy of one dollar, less five per cent., which had to be paid into the cash basis fund. The strictest economy had to be practiced. The rec-

ords show that the last fiscal year was the most economical one during the past ten years of the city's history. In the "making of both ends meet," we had the co-operation of all the city's employes and also those who furnished supplies. For two months the water company furnished free water, and the lighting company gave us special rates. But the year finally passed and we were even with the world, and had \$17,000 in our cash basis fund. From now on it will be smoother sailing.

In view of the difficulties which we had to encounter, it would seem as though all other cities could establish themselves upon a cash basis, with comparatively little difficulty.

While it is true that we are compelled to do this by the requirements of our charter, it is clearly within the power of any municipality to do the same voluntarily. All that is required is a determined purpose on the part of the city administration to set apart each year a percentage of the revenue until sufficient money is saved to make the fund complete. It is a reform that would be welcomed to all who have business relations with the city and to be able to pay cash at any time is a circumstance that would be contemplated with pride by every citizen. An earnest endeavor in this direction ought to accomplish beneficial results.—C. J. Martin, Mayor of San Jose, in "California Municipalities."

NEW CHARTER FOR SECOND-CLASS CITIES.

The charter for cities of the second class in New York state, which will go into effect on January 1, 1900, is of peculiar interest at this time. The charter applies to Rochester, Syracuse, Albany and Troy, and the new officials for these cities who were elected last week will work under the new law.

Under the new charter the legislative power is vested in a Common Council whose members are to be elected in the wards as at present for terms of two years. They are to serve without pay. Their presiding officer, who will act as mayor during the absence of that official, is to be elected from the city at large and will receive an annual salary of \$1,000.

The executive power is vested in a mayor, to be elected by the people. He will receive an annual salary of \$5,000 and will serve two years. He must call together the heads of departments at least twelve times in each year for consultation and advice upon the affairs of the city; may call upon the heads of departments for reports; shall see that all city employes discharge their duties faithfully, and shall have authority at all times to examine the books and papers of any officer.

The people are to elect a comptroller to serve for two years at a salary of \$3,500, who "shall superintend the fiscal concerns of the city." He may appoint a deputy and both must give bonds in such sum as may be prescribed by the Common Council. The comptroller must prescribe the form of all claims to be presented against the city, and no claim shall be paid without his approval.

The people will also elect a treasurer to serve for two years, at an annual salary of \$3,000. He may appoint a deputy, and "shall receive and have the care and custody of all moneys of the city." Both treasurer and deputy are required to give a bond. The treasurer must report daily to the comptroller the money received, by items.

The mayor is to appoint a commissioner of public works, a city engineer, a commissioner of public safety, a commissioner of charities and correction, a corporation counsel, and a sealer of weights and measures. All of them are to serve for two years.

A board of estimate and apportionment is created, consisting of the mayor, comptroller, corporation counsel, president of the Common Council and city engineer, except that when the number of subordinates or the salaries thereof in the department of any of the members of said board, are to be fixed and determined, the treasurer shall temporarily take the place of the member whose number of subordinates or the salaries thereof is under consideration for the purpose of fixing said salaries or number of subordinates, and for that purpose alone. The members of the board shall meet upon the call of the mayor, or as directed by the board. The mayor shall be president of the board and the city clerk shall act as secretary thereof. Within sixty days after the commencement of each fiscal year, the board of estimate and apportionment shall make an estimate of the several sums of money which they deem necessary to be raised by tax to pay the expenses of conducting the business of the city. This shall be known as the tax budget and must be submitted to the Common Council, which may decrease any item therein, but may not increase an estimate; when approved by the Common Council, the tax budget and the several amounts therein shall be levied, assessed and raised by tax upon the real and personal property liable to taxation in the city.

A department of public works is created. At its head will be a commissioner of public works, appointed by the mayor to serve for two years. He may appoint a deputy and both must give bonds. The commissioner will have charge of the construction and repair of streets, city buildings, bridges, water works and sewers. He will appoint a superintendent of water works.

In the department of public works there is to be a board of contract and supply, composed of the mayor, comptroller, commissioner of public works, corporation counsel, and city engineer. It is the duty of this board to advertise for bids and to let to the lowest bidder, who will give adequate security for the performance of his contract, all contracts for the performance of any work, or for the supply of any materials for the department of public works, department of public safety, department of public instruction, department of charities and correction of the city in all cases where the work and materials will cost to exceed \$50, unless by an ordinance passed by a unanimous vote of the Common Council and by the unanimous approval of the board of estimate and apportionment, it is determined to be impracticable to procure the work or materials by contract.

All materials and supplies required in any office, court, board or department, shall be called for in writing and shall be contracted for by the board of contract and supply in the manner above provided; but where any work or repairs needed to be done or materials or supplies to be furnished shall not exceed fifty dollars in cost, the board of contract and supply may authorize the commissioner of public works, or the commissioner of public safety, as the case may be, to give written orders therefor and the bills so incurred shall be presented

to the comptroller for examination and audit, accompanied with such orders.

The city engineer, to be appointed by the mayor, must be a civil engineer of at least five years' practical experience in his profession. His office to be a bureau in the department of public works. It will be his duty to perform all the ordinary engineering and surveying needed in the affairs and business of the city and to supervise, under the general direction of the commissioner of public works, all the work done for the city in which the skill of his profession may be required or useful. He shall act as superintendent of public buildings and bridges.

A department of public safety is created, at the head of which there is to be a commissioner of public safety, appointed by the mayor and to hold office for two years. He shall have charge and supervision of the police department and may appoint a clerk. All officers and members of the police department shall remain and continue in their respective positions until their positions shall become vacant by death, resignation, or removal. Vacancies will be filled by the commissioner of public safety. The Common Council may determine by ordinance the number of the members of the police department, and the classes or grades into which they shall be divided; but the number of members of the police department shall not be increased without the approval of the board of estimate and apportionment by a resolution adopted by at least four affirmative votes of the board. One very important provision is that "no officer or member of the police department shall be a member of or delegate to any political convention, nor shall he be present at any such convention except in the performance of duty relating to his position as such officer or member."

The commissioner of public safety shall also have charge of the fire department, which shall remain, as to its component parts, as now constituted until changed by the Common Council. All officers and members shall continue in their respective positions until their positions become vacant by death, resignation, or removal.

The commissioner of public safety will also have charge of the department of health and shall appoint a health officer who shall be a doctor of medicine duly licensed under the laws of the state to practice as a physician and surgeon, and who has had at least ten years' practice as such. He shall hold his office during good behavior, or until by age or disease he becomes permanently incapacitated or unfit to discharge his duties. The health officer may appoint a deputy and employ such experts to assist him as may be necessary.

Four assessors are to be elected this fall, two for two years and two for four years, and their successors are to be elected for four-year terms. The four assessors are to compose the department of assessment and taxation. There are carefully drawn provisions regarding taxes, assessments, local improvements, tax sales and redemption.

A department of charities and correction is created, at the head of which there is to be a commissioner of charities and correction appointed by the mayor. He shall have the general care, management, administration and supervision of the charities, alms-houses, hospitals, houses of correction, and all other similar institutions. He shall make regulations for the expenditure of money for the relief of the poor "and shall furnish

to the mayor a daily report of the aid and relief granted by him, with the names and addresses of all recipients." The commissioner is to appoint an overseer of the poor.

A department of law is created, at the head of which is a corporation counsel, appointed by the mayor. He may appoint an assistant and such other subordinates as may be prescribed by the board of estimate and apportionment.

A sealer of weights and measures is to be appointed by the mayor. Within the city he is to have the powers and perform the duties of town sealers of weights and measures under the general laws of the state, and he is to have no pay except the fees authorized by law.

An Electric Searchlight.

The New York fire department will soon have as a part of its equipment a complete electric searchlight plant on wheels, which will attend fires with the other apparatus, and it is expected will perform an important part in saving life and property. The searchlight will be used to illuminate dark parts of the street and aid firemen in laying hose, erecting ladders and also to light up the fronts of buildings where people may be in danger and to throw light into the buildings themselves to aid the firemen in their work. The apparatus will resemble a fire engine in appearance and will consist of a boiler, a direct coupled engine and dynamo and two searchlights, each with an eighteen-inch projecting lens. The lights can be used either from the machine itself or carried to any convenient point, connection being maintained by means of flexible cables.

Spoils System Unknown in St. Paul.

As a natural sequence of the character of the administrative boards, it is significant that those departments which have been most free from the taint of spoils have made the best records in point of economy and efficiency. The superintendent of the almshouse has served eleven years; the superintendent of the workhouse, fifteen years; the superintendent of parks, nine years; the city librarian, sixteen years. The secretary of the board of control has been in service thirteen years, and the manager of the water board seventeen years. The experience and knowledge of details acquired by these and other officers in carrying out the policies of the board, and in some cases largely molding those policies, have made their services doubly valuable. It is said that under no one of them has an applicant for position ever been asked to state his politics.—From "Recent Municipal Progress in St. Paul," by Webster Wheelock, in "Municipal Affairs."

Trade Notes.

—There is a movement under way at Donaldsonville, La., to issue \$40,000 of bonds for public improvements, including sewerage and paving. At a recent

citizens' mass meeting the sentiment was unanimously in favor of the bond issue.

—The present contract for lighting the streets of Oswego, N. Y., by electricity expires February 20, 1900. The city pays \$81 per year per arc lamp. As there is no opposition, it is very likely that a new contract will be made upon present terms.

—The officials and the citizens of the suburban towns north of Chicago along the shore of Lake Michigan are considering the question of sanitary sewage disposal. At present these towns are all draining their sewage into the lake, the source of their water supply, with the result of polluting the water. The towns may jointly build a sewage disposal or a water filtration plant.

—Mr. C. S. Knight, vice president and general manager of the Siemens & Halske Electric Company of America, of Chicago, has resigned that office. He will be succeeded by Mr. O. S. Lyford, Jr., the electrical engineer of the company before it passed into the control of the Whitney syndicate. Mr. Knight is in New York to take up another line of work with the syndicate.

—McConnell & Lamme, of Atchison, Kan., have been awarded the contract for the construction of 2,400 feet of 48 and 36-inch sewer at Crawfordsville, Ind. Their bid, \$8,175, was the lowest. Other bidders were John Johnson and James M. Waugh, of Crawfordsville; Michael Weber, of Evansville; Indiana Construction Company, of Terre Haute; J. P. Shanahan, of Chicago, and McMahon & Cooney, of St. Louis.

MOVEMENT TO LIMIT MUNICIPAL OWNERSHIP.

Robert P. Porter has a special article in the New York "Times," in which he says that the contention of a large and influential body of Englishmen, who have become thoroughly alarmed at the present situation, is that individual effort in England is being crushed and enterprise stifled by municipal interference; that unless a vigorous opposition is organized against these encroachments of the municipality the national consciousness will be stifled in the coils of the boa constrictor bureaucracy as effectually as it has been in Germany. The facts in relation to this important movement, which only crystallized a few months ago, will come as a surprise to those in the United States who have accepted without question the conclusions of enthusiastic writers or half-baked economists in relation to the achievements of municipal trading in England. If only a part of the acts alleged as a basis for parliamentary action and a halt in this tendency to state omnipotence be true, the disillusioning is likely to be as complete as it will be sudden:

"The immediate cause for alarm and

dissatisfaction on the part of taxpayers is the increase of local indebtedness and taxation since the inauguration of municipal trading. From 1878 to 1897 the local debt of England and Wales has more than doubled, and now represents the enormous sum of \$1,260,000,000, over half of which represents various trading plants which may or may not be worth the original capital invested therein. Experts declare that if the English authorities retain possession of the electrical industry and keep pace with the needs of the future, they will have to spend \$500,000,000 where they have at present spent \$5,000,000. The most discreditable thing to municipal enterprise in England in this connection is the fact that in no less than 104 cases local authorities have obtained and are holding 'provisional orders' granted by parliament for electric lighting, etc., without doing anything to carry the powers into effect. Dog-in-the-manger like, these powers have been taken to keep private and individual effort out, and the natural result is to retard enterprise and stop the progress of the towns.

"That these encroachments of municipal governors into the domain of commerce restrict and repress individual enterprise there can be no doubt. Indeed, it is being loudly proclaimed in England that it has had the deplorable effect of enslaving the free energies of the nation, especially in the exploiting of electrical enterprise. The facts presented to sustain the charge, it must be admitted, are of a startling character. Not only have municipalities obtained 'provisional orders' in order to prevent individuals from entering the field of competition, but they have organized an opposition to all efforts on the part of private enterprise to extend the service or lower the price. In these efforts to stifle all enterprise and obtain a complete monopoly for the British town clerk and his municipal contractors and friends, the municipal corporation association has been formed. This body, I am told, raises its funds for such extraordinary and, happily in the United States, unheard-of proceedings by a ratable levy over the whole of the affected towns, so that, although ostensibly preserving its local character, the opposition is centralized. This association, equipped with learned counsel and a well-organized lobby, becomes most powerful at Westminster. In the particular case referred to it called upon municipalities all over the kingdom to bring pressure upon their respective members of parliament to defeat the bill. Thus the north of Scotland and south of Ireland are whipped into line to defeat measures which would be of immense value to Lancaster, York, and some of the midland counties. As things stand at the present moment in England this powerful organization is the barrier against the initiation of individual enterprise,

and the risk of having to face such an opposition practically debars even the attempt, except on some such scale as above described.

"Another element of danger has developed both in Manchester and Glasgow, where these cities, not content to manage their own tramways, are seeking power to inaugurate a system of tramways within from ten to sixteen adjoining districts, in which it is actually claimed by these municipalities that no company whatever should have a right to put down or work tramways. The municipalities of Manchester and Glasgow, bear in mind, do not say they will make all necessary tramways, but the contention is that only those shall be made which they approve. All these arbitrary measures come before parliament, so the opponents to municipal trading claim, promoted and lobbied by the aforesaid municipal corporation association. It is said that no less than seventy municipalities are applying either to parliament or the board of trade for power to trade in electrical fittings, thus coming actually in competition with private manufacturers, and in addition to that a large number of bills from municipalities seeking to become trading corporations. In all these enterprises the wretched rate payer will be called upon to pay whether the business is successful or not. As in the case of a company, there would be no winding up. The effect of all this on labor is most disastrous. The thousands of employees of these cities are all voters, and they are bound to vote for those who propose to take care of them, regardless of the poor beggars whose occupation is destroyed by the curtailing of individual enterprise. In a recent election for the London county council, the borough of Southwark was treated to a poster to the effect: 'Vote for So and So, who will pay the scavengers the wages of 25 shillings a week.' Here was a serious element of corruption which will become bad enough in Great Britain, but unbearable in the United States.

"These are some of the specific charges which will be made during the next session of parliament against what the English call municipal trading, but which we exploit under the term municipal ownership. The general charges are equally worth considering and should start those advocating these schemes for the United States thinking. These charges completely dispose of the four stock arguments of the municipal ownership advocates in the United States, which are, as is well known, that municipalities can borrow more cheaply than private individuals; that if a profit can be made out of the general supply of some commodity for the community, why should not the community realize that profit for itself; that the motives of private adventure are self-seeking and sordid, and contrast unfavorably with the disinterestedness of the city aldermen (New York, Philadelphia and Chicago, for example); that some of these enterprises are in the nature of monopolies and that it is better that the government should be a monopolist than a private person. To this case of the municipal trader, which I have put in a nutshell, the English opponent of municipal socialism aptly and vigorously replies, sustaining his position with an array of data that confounds the college professor and socialistic clergymen who have rushed madly into the municipal ownership arena and want our cities to absorb alike all the lighting and street railway enterprises."

CHIEF TRAUTWINE RESIGNS.

John C. Trautwine, Jr., chief of the bureau of water, Philadelphia, has resigned. His resignation was sent to Director of Public Works Haddock on November 8, the day after the election on the proposed \$12,000,000 water loan. The loan bill was defeated, and thus Mr. Trautwine's position on the improvement of the water supply has been indirectly endorsed by a vote of the people. Mr. Trautwine has always contended that the expenditure at this time of from \$14,000,000 to \$20,000,000 for water works improvements would be unwise and a wrongful use of the city's funds and credit. He holds that the prevention of waste and the purification of the water supply are works that should be contemporaneous, and that the necessary improvements should be made gradually and at a present outlay within the \$3,000,000 now available for the purpose.

Mr. Trautwine's letter of resignation is as follows:

Philadelphia, Nov. 8, 1899.

Mr. William C. Haddock,

Director Department of Public Works.

Dear Sir: At the request of the experts appointed in May last by his Honor, the Mayor, I remained in office as Chief of the Bureau of Water until after the presentation of their report.

Since then, at the request of the Chairman of the Executive Committee of the Allied Water Committees, I have remained in office until after yesterday's popular vote upon the loan of \$12,000,000 for the improvement of the water supply.

In the interest of the City, permit me, before relinquishing my office, to urge upon you the importance of the matters which I brought to his Honor's attention in my letter to him of October 18th, which I may summarize as follows:

The report of the experts completely reaffirmed the principle for which I have always contended, viz.:

"The City holds in her own hands the key to the solution of her water problem. All we need is means for preventing waste and means for filtering water."

In his open letter of October 24th, addressed to the Executive Committee of the Allied Water Committees, his Honor, the Mayor, announced that he stood pledged "to recommend immediately to Councils the necessary legislation to carry into effect the filtration plans of the water experts."

In order that the filtration plans of the experts may be carried into effect, within the means specified in the proposed loan and those now available, the waste restriction plans of the experts must also be carried into effect; for their estimate of over \$14,000,000 is based upon an assumed supply considerably less than the present consumption, and much less than that consumption will have become by the time the proposed works are completed. Without waste restriction, and taking the expert's estimate as a basis, at least \$20,000,000 will be required.

In order to bring the cost of construction

within their estimate of over \$14,000,000, the experts have earnestly recommended a preliminary expenditure of \$100,000 in waste restriction. This will at first meet with opposition; for our people, having had no experience of waste restriction, and being uninformed of its benefits, as experienced in other and more progressive communities, regard it as a menace.

Now, in order that this opposition may be reduced to a minimum, and that the full benefits of the waste restriction may be realized and the \$100,000 be made effective, I urge that it be not scattered over the entire city, but concentrated upon the Roxborough system, where it will probably suffice to reduce the consumption by one half, without in the least curtailing anyone's lavish use of water.

If spread over the entire city, the expenditure of this \$100,000 in waste restriction will arouse a maximum of irritation and accomplish a minimum of good; whereas, if concentrated upon the Roxborough system, as here proposed, the results will be such as to demonstrate to our people that waste restriction is their friend; for it is the universal experience that practical acquaintance with waste restriction removes the prejudice against it.

In making this recommendation I am actuated by the hope that our city may yet be induced to heed the advice of every one of its Water Chiefs, from and including Colonel (now General) Ludlow, and that of the late commission of experts, to abandon the ancient and follow the modern method of water supply, with waste restriction as its corner-stone, and thereby save from \$8,000,000 to \$14,000,000 in the present cost of construction; for this demonstration, in the Roxborough district, will surely lead to the adoption of modern methods in the remaining districts, and thus to the indicated saving in the present cost of construction, to a corresponding economy in expense of operation, and to the hastening of the completion of the works.

The words of the Mayor of Atlanta, applied to the similar case of that city, are even more forcibly applicable to our own. He says: "There never was a better illustration of the duty so constantly pressing upon municipal authorities to save and protect the unthinking public against themselves and against the consequences of their own want of knowledge."

The experience of Atlanta and of many other places shows that waste restriction is no experiment, and that nothing but popular misapprehension, born of ignorance, stands between our people and the saving of millions for useful purposes. The removal of this misapprehension is the object of my present recommendation.

In accordance with my repeated recommendations, approved by his Honor in April last, I urge also the immediate construction, under the best expert advice obtainable, of a plant for the filtration of all the water that the Roxborough district can possibly use and enjoy, with provision for five years to come, and of a plant for the

(Continued on next page.)

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filtration of all the water now supplied to the Frankford district.

With the knowledge obtained in the construction and operation of these two plants, we shall be in position to proceed safely with the construction of plants for the filtration of the remainder of the supply.

No one will question the urgent necessity of early improvement in the quality of our entire supply; but it will also be conceded that it is, if possible, even more important that our steps be sure; for more haste, with insufficient knowledge, may mean less speed; and it is altogether possible that a satisfactory purification of the entire supply may be accomplished at an earlier date by proceeding in accordance with his Honor's very proper determination, than by rushing head-long into the immediate construction of filter plants for the entire supply in the present state of our knowledge.

The defeat of the loan bill by yesterday's vote need in nowise have interfered with the improvement of the City's water supply along the lines herein recommended; for the \$3,700,000 already available, which is more than half the cost of all needed improvements, will more than suffice for all that can properly be done in the present or in the near future.

Whatever amount of money the City can by any means obtain would be none too great to expend for any needed improvement or extension of her water supply; but this consideration does not justify us in expending a single million without corresponding benefit. I therefore desire, while still Chief of the Bureau of Water, to renew my protest against the expenditure of from \$8,000,000 to \$14,000,000 of borrowed money, and the addition of several hundred thousand dollars to our annual operating expenses, for the sole purpose of furnishing and filtering enormous volumes of water to be absolutely wasted by only a few inconsiderate people who are victimizing the complacent majority. Nothing could be more directly opposed to his Honor's repeatedly and emphatically avowed determination to permit not even a trifling useless expenditure of the City's money.

I now have the honor to place in your hands my resignation of the office of Chief of the Bureau of Water.

Very respectfully yours,

(Signed.)

JOHN C. TRAUTWINE, JR.

AN AMUSING DOCUMENT.

Mr. Seymour Van Santvoord, one of the receivers of the Walter A. Wood Mower and Reaper Works of Rensselaer County, N. Y., was a defeated candidate at the recent election and he gets, and gives, entertainment in this fashion:

MR. VAN SANTVOORD'S EXPENSE ACCOUNT.

Seymour Van Santvoord, although defeated, has not been cast down, as the following affidavit of expenses filed with the county clerk indicates:

Rensselaer County, ss.: Seymour Van Santvoord of Troy, N. Y., being duly sworn, says that, as he has been informed, and at one time believed, he was a candidate for the office of county treasurer at a public election held in this county yesterday, but that from the official returns of said election it is apparent—and deponent is of present opinion—that he was not a candidate. Nevertheless, in compliance with the spirit of the statute (which evidently applies to those who "run" both ways), deponent avers that the following itemized statement, which is in all respects full and true, shows in detail all the moneys contributed or expended by him, directly or indirectly, either by himself or through any other person in aid (?) of his election (?), to wit:

Voluntary contribution to the Democratic county committee, to be applied for legitimate election expenses, paid to John L. Sheary, chairman, \$1,000; to the Troy Press company for printing slips, \$3; to Henry Stowell & Son for printing slips, \$3.25; letter postage on the only one of such slips distributed by deponent, 2 cents; to C. W. Brown for addressing and distributing newspapers, including the price of such papers and postage thereon, \$100; Troy Observer company for 300 copies of paper, ordered for distribution in my interest by a

well meaning friend, whose intentions were so manifestly good and who is now so sorrowful that I have found a melancholy pleasure in assuming the bill, \$15; for one cigar, bestowed upon a Republican friend, who had volunteered his non-support, in the hopes that coals of fire might bring him to a more sympathetic frame of mind, 5 cents; total, \$1,121.32.

Deponent finally avers that while this first experience in the penumbra of practical politics is, in his opinion, fairly worth the cost, as expressed in the above monetary equivalent, the same ought not, as has been maliciously observed, to be considered as having been an undoubted "bargain."

This deposition made on the morning after the cyclone at the village of Hoosick Falls, without whose election returns deponent's political existence would be unilluminated by a ray of hope, and there

SEYMOUR VAN SANTVOORD.
Sworn to before me November 8, 1899.
Hugh P. Blackinton, Notary Public.

BARGAIN FOR POLICE DEPARTMENT.

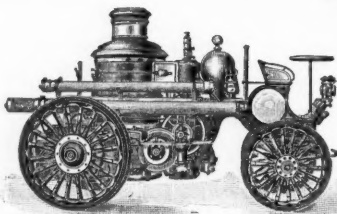
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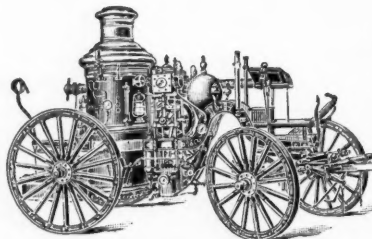
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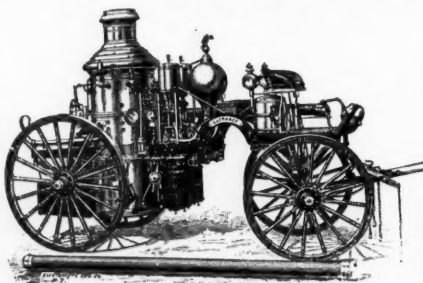
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A MOST VALUABLE BUREAU.

The Memphis city officials are inclined to believe that the League of American Municipalities is a most valuable institution in a great many respects. It is not generally known that the League maintains a bureau of information, the duty of which is to collect information of every kind pertaining to the cities of the nation, tabulate the same where possible, and keep it all to furnish to cities that are members of the League upon application. Then when any city which is a member of the League, as is Memphis, desires information on any subject, it is necessary only to apply to the bureau, and all information on hand is sent forward without delay.

The value of this service is incalculable. It is astonishing how many subjects will arise in the course of a year upon which information is desired. For instance, if Memphis desired now to inaugurate a park system, with some sort of supervisory board, the city would be at a loss how to constitute such a board and what authority to allow it. A letter to the bureau of information of the League of American Municipalities would bring by return mail a pamphlet showing the systems in operation in all other American cities, with a statement of the degree of success attending each system. The city officials would be able to choose which system they wanted, or to combine several systems. The same information furnished by the bureau would cost, if collected by this city, a great deal of money and could not be done without great loss of time.

This is but one illustration of the value of the bureau. There is scarcely a subject coming up for treatment by the city

government as to which the bureau cannot on short notice furnish valuable information.—Memphis "Sanitar."

NEXT MAYOR OF BOSTON.

John R. Murphy, who recently resigned as water commissioner, is very likely to be the next mayor of Boston. As this issue of "City Government" goes to press, the democratic caucuses are being held with every indication of a victory for Mr. Murphy. If he secures the nomination there will be very little doubt that he will be victorious at the polls next month. He has held the offices of fire commissioner, wire commissioner and water commissioner in succession, his appointment from one position to the other always having been made on account of his recognized ability to successfully cope with difficult problems arising in the execution of departmental work.

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